

Figure 1A. Amino acid sequence of secreted ColoUp1 protein (I) (SEQ ID NO: 1)

TVAAGCPDQSPELQPWNPGHDQDHVHIGQGKTLLLTSSATVYSIHISEGGKLVIKDHD
EPIVLRTRHILIDNGGELHAGSALCPFQGNFTIILYGRADEGIQPDPYYGLKYIGVGKG
GALELHGQKKLSWTFLNKTLPGGMAEGGYFFERSWGHRGVIVHVIDPKSGTVIHSDRF
DTYRSKKESERLVQYLNAPVDGRILSVAVNDEGSRNLLDDMARKAMTKLGSKHFLHLGFR
HPWSFLTVKGNPSSVEDHIEYHGHRGSAARVFKLQTEHGEYFNVSLSEWQDVEW
TEWFDHDKVQSQTKGGEKISDLWKAHPGKICNRPIDIQATTMDGVNLSTEVVYKKGQDYR
FACYDRGRACRSYRVRFLCGKPVRPKLTVTIDTNVNSTILNLEDNVQSWKPGDTLVIAS
TDYSMYQAEFFQVLPCRSCAPNQVKVAGKPMYLHIGEEIDGVDMRAEVGLLSRNIIVMG
EMEDKCYPYRNHICNFFDFDTFGGHIKFALGFKAHLEGTELKHMGQQLVGQYPIHFHL
AGDVDERGGYDPPTYIRDLSIHHTFSRCVTVHGSNGLLIKDVVGYNSLGHCFTEGPE
ERNTFDHCLGLLVKSGTLLPSDRDSMKCKMITEDSYPGYIPKPRQDCNAVSTFWMANPN
NNLINCAAAGSEETGFWFIFHHVPTGPSVGMYSPGYSEHIPLGKFYNNRAHSNYRAGMI
IDNGVKTTEASAOKRPFLSIISARYSPHQDADPLKPREPAIIRHFIAYKNQDHGAWLR
GGDVWLDSCRFADNGIGLTLASGGTFPYDDGSKQEIKNSLFVGESGNVGTEEMMDNRIWG
PGGLDHSGRTLPQNFPIRGIQLYDGPINIQNCTFRKFVALEGRHTSALAFRLNNAWQ
SCPHNNVTGIAFEDVPITSRVFFGEPGPWFNQLDMGDKTSVFHDVDGSVSEYPGSYLT
KNDNWLRHPDCINVPDWRAICSGCYAQMYIQAYKTSNLRMKIIKNDFPSHPLYLEGA
LTRSTHYQQYQPVVTLQKGYTIHWDQTAPAEELAIWLINFNKGDWIRVGLCYPRGTTFSI
LSDVHNRLLKQTSKTGVFVRTLQMDKVEQSYPGRSHYYWDEDSGLLFLKLKAQNEREKF
AFCSMKGcerIKIKALIPKNAGVSDCTATAYPKFTERAVVDVPMPKKLFGSQLKTKDHF
LEVKMESSKQHFFHLWNDFAYIEVDGKKYPSSEDEGIQVVIDGNQGRVVSHTSFRNSIL
QGIPWQLFNYVATIPDNSIVLMAKGRYVSRGPWTRVLEKLGADRGLKLKEQMAFVGFK
GSFRPIWVTLDTEDHKAKIFQVVPPIPVVKKKL

Figure 1B. Amino acid sequence of secreted ColoUp1 protein (II) (SEQ ID NO: 2)

AGCPDQSPELQPWNPGHDQDHVHIGQGKTLLLTSSATVYSIHISEGGKLVIKDHDEPI
VLRTRHILIDNGGELHAGSALCPFQGNFTIILYGRADEGIQPDPPYYGLKYIGVGKGGAL
ELHGQKKLSWTFLNKTLPGGMAEGGYFFERSWGHGVIVHVIDPKSGTVIHSDRFDTY
RSKKESERLVQYLNAPDGRILSVAVNDEGSRNLDLDMARKAMTKLGSKHFLHLGFRHPW
SFLTVKGNPSSVEDHIEYHGRGSAARVFKLFQTEHGEYFNVSLSSSEWVQDVEWTEW
FDHDKVSQTKGGEKISDLWKAHPGKICNRPIDIQATTMDGVNLSTEVVYKKQDYRFAC
YDRGRACRSYRVRFLCGKPVPKLTVIDTNVNSTILNLEDNVQSWKPGDTLVIASTDY
SMYQAEFFQVLPCRSCAPNQVKVAGKPMYLHIGEEIDGVDMRAEVGLLSRNIIVMGEME
DKCYPYRNHICNFFDFDTFGGHIKFALGFKAHLEGTELKHMGQQLVGQYPIHFHLAGD
VDERGGYDPPTYIRDLSIHHTFSRCVTVHGSNGLLIKDVVGYNLSGHCFTEGPEERN
TFDHCLGLLVKGSTLLPSRDSKMCKMITEDSYPGYIPKPRQDCNAVSTFWMANPNNNL
INCAAAGSEETGFWFIFHVPTGPSVGMYSPGYSEHIPLGKFYNNRAHSNYRAGMIIDN
GVKTTEASAKDKRPFLSISARYSPHQDADPLKPREPAIIRHFIAYKNQDHGAWLRGGD
VWLDSCRFADNGIGLTLASGGTFPYDDGSKQEIKNSLFVGESGNVGTEMMDNRIWGPGG
LDHSGRTLPIQNFPIRGIQLYDGPINIQNCTFRKFVALEGRHTSALAFRLNNAWQSCP
HNNVTGIAFEDVPITSRVFFGEPGPWFNQLDMGDKTSVFHDVDGSVSEYPGSYLTKND
NWLVRHPDCINVPDWRGAICSGCYAQMYIQAYKTSNLRMKIIKNDFPSHPLYLEALTR
STHYQQYQPVVTLQKGYTIHWDQTAPAEALAIWLINFNKGDWIRVGLCYPRGTTFSILSD
VHNRLLKQTSKTGVFVRTLQMDKVEQSYPGRSHYYWEDSGLLFLKLKAQNEREKFAFC
SMKGCERIKIKALIPKNAGVSDCTATAYPKTERAVVDVPMPKKLFGSQLKTQDHFLEV
KMESSKQHFFHLWNDFAYIEVDGKKYPSSEDGIQVVIDGNQGRVVSHTSFRNSILQGI
PWQLFNYVATIPDNSIVLMAKGRYVSRGPWTRVLEKLGADRGLKLKEQMAFVGFKGSF
RPIWVTLDTEDHKAKIFQVVPIPVVKKKLL

**Figure 2. Amino acid sequence of secreted ColoUp2 protein
(SEQ ID NO: 3)**

LQEVHVSKE~~T~~IGKISAASKMMWCSAAVDIMFLLDGSNSVGKGSFERSKHFAITVCDGLD
ISPERVRVGAFQFSSTPHLEFPLDSFSTQQEVKARIKRMVF~~K~~GGRTETELALKYLLHRG
LP~~G~~GRNASVPQILIIIVTDGKSQGDVALPSKQLK~~E~~RGVTVFAVGVRFP~~W~~EELHALASEP
RGQH~~V~~LLAEQVEDATNGLFSTLSSAICSSATPDCRVEAHPC~~E~~HRTLEMVREFAGNAPC
WRGSRRTLAVLAAHCPFYSWKRVFLTHPATCYRTT~~C~~PGPCDSQPCQNGGTCVPEGLDGY
QCLCPLAFGGEANCALKSLECRV~~D~~LLFLLDSSAGTTLDGFLRAKVFVKRFVRAVLSED
SRARVG~~V~~ATYSRELLVAVPVGEYQDVPDLVWSLDGIPFRGGPTLTGSALRQAAERGF~~S~~
ATRTGQDRPRRVVLLTESHSEDEVAGPARHARARE~~LLL~~LGVGSEAVRAELEEITGSPK
HVMVYSDPQDLFNQIPELQGKLC~~S~~RQRPGC~~T~~QALDLVFM~~L~~DT~~S~~ASVG~~P~~ENFAQM~~Q~~SFV
RSCALQF~~E~~VNP~~D~~VTQVGLVVYGSQVQTA~~F~~GLDTK~~P~~TRAAMLRAISQAPYLGGVG~~S~~AGTA
LLHIYDKVMTVQRGARPGVPKAVVVL~~T~~GGRAEDA~~A~~VPAQKLRNNGISV~~L~~VVGVPVLS
EGLRRLAGPRDSL~~I~~HVAAYADLRYHQDVLIEWL~~C~~GEAKQPVNLCKPSPCMNEGSCVLQN
GSYRCKCRDGWEGPHCENRFLRRP

Figure 3. Nucleic acid sequence of ColoUp1 (SEQ ID NO: 4)

CGTGACACTGTCTGGCTACAGACCCAGAGGGAGGCACACTGCCAGGATGGGAGCTGCTG
GGAGGCAGGACTTCCTCTCAAGGCCATGCTGACCACAGCTGGCTGCTGGGTGCCCTGACCAGAGCCCTGAGTTGCA
TTCCTGGGGCCACATCCACAGTGGCTGCTGGGTGCCCTGACCAGAGCCCTGAGTTGCA
ACCTGGAACCTGGCATGACCAAGACCACCATGTGCATATCGGCCAGGGCAAGACAC
TGCTGCTCACCTCTGCCACGGCTATTCCATCCACATCTCAGAGGGAGGCAAGCTG
GTCATTAAAGACCAACGACGGAGCCGATTGTTTGCACACCCGGCACATCCTGATTGACAA
CGGAGGAGAGCTGCATGCTGGAGTGCCTCTGCCCTTCCAGGGCAATTTCACCATCA
TTTGTATGGAAGGGCTGATGAAGGTATTCCAGCCGATCCTTACTATGGTCTGAAGTAC
ATTGGGTTGGTAAAGGAGGCGCTTGCAGTTGCATGGACAGAAAAAGCTCTGGAC
ATTTCTGAACAAAGACCCCTCACCCAGGTGGCATGGCAGAAGGGAGGCTATTGGAAA
GGAGCTGGGCCACCGTGGAGTTATTGTTCATGTCATCGACCCAAATCAGGCACAGTC
ATCCATTCTGACCGGTTGACACCTATAGATCCAAGAAAGAGAGTGAACGTCTGGTCCA
GTATTGAAACGCGGTGCCGATGGCAGGATCCTTCTGTTGCAGTGAATGATGAAGGTT
CTCGAAATCTGGATGACATGCCAGGAAGCGATGACCAAAATTGGAAAGCAAACACTTC
CTGCACCTGGATTAGACACCCCTGGAGTTCTAAGTGTAAAGGAAATCCATCATC
TTCAGTGGAAAGACCATATTGAATATCATGGACATCGAGGCTCTGCTGCTGCCGGTAT
TCAAATTGTCAGACAGAGCATGGCAATATTCAATGTTCTTGCCAGTGAGTGG
GTTCAAGACGTGGAGTGGACGGAGTGGTCGATGATAAAGTATCTCAGACTAAAGG
TGGGGAGAAAATTTCAGACCTCTGAAAGCTACCCAGGAAAATATGCAATCGTCCA
TTGATATAACAGGCCACTACAATGGATGGAGTTAACCTCAGCACCGAGGTTGTCTACAAA
AAAGGCCAGGATTATAGGTTGCTGCTACGACCGGGCAGAGCCTGCCGGAGCTACCG
TGTACGGTCTCTGTGGAGCCTGTGAGGCCAAACTCACAGTCACCATGACACCA
ATGTGAACAGCACCATTCTGAACCTGGAGGATAATGTACAGTCATGGAAACCTGGAGAT
ACCCGGTCACTGCCAGTACTGATTACTCCATGTACCGAGGAGTCCAGGTGCT
TCCCTGCAGATCCTGCGCCCCAACCAGGTCAAAGTGGCAGGGAAACCAATGTACCTGC
ACATCGGGGAGGAGATAACGGCGTGGACATGCGGGCGGAGGTTGGCTTCTGAGCCGG
AACATCATAGTGTGGGGAGATGGAGGACAAATGCTACCCCTACAGAAACACATCTG
CAATTCTTGACTTCGATACCTTGGGGCCACATCAAGTTGCTCTGGATTAAAGG
CAGCACACTGGAGGGCACGGAGCTGAAGCATATGGACAGCAGCTGGTGGTCACTAC
CCGATTCACTTCCACCTGGCGGTGATGTAGACGAAAGGGAGGTTATGACCCACCCAC
ATACATCAGGGACCTCTCCATCCATCACATTCTCGCTCGTCACAGTCATGGCT
CCAATGGCTTGTGATCAAGGACGTTGTGGCTATAACTCTTGGGCCACTGCTTCTC
ACGGAAGATGGCCGGAGGAACGCAACACTTTGACCAACTGTCTTGGCCTCCTGTCAA
GTCTGGAACCCCTCTCCCTCGGACCGTGAACAGCAAGATGTCAAGATGATCACAGAGG
ACTCCTACCCAGGTACATCCCCAAGCCAGGCAAGACTGCAATGCTGTCCACCTTC
TGGATGGCAATCCAACAACAACCTCATCAACTGTGCCGCTGCAGGATCTGAGGAAAC
TGGATTTGGTTATTTCACCAAGTACCAACGGCCCTCCGTGGGAATGTACTCCC
CAGGTTATTCAAGACATTCCACTGGAAAATTCTATAACAACCGAGCACATTCCAAC
TACCGGGCTGGCATGATGACAGACACGGAGTCAAAACCAACCGAGGCTCTGCCAAGGA
CAAGCGGCCGTTCTCAATCATCTGCCAGACAGCCCTCACCAGGACGCCGACCC
CGCTGAAGCCCCGGAGCCGGCATCATCAGACACTTCATTGCCCTACAAGAACCAAGGAC
CACGGGGCTGGCTGCCGGGGATGTGTGGCTGGACAGCTGCCGGTTGCTGACAA
TGGCATTGGCCTGACCTGGCCAGTGGTGGAACCTTCCGTATGACGACGGCTCCAAGC
AAGAGATAAAGAACAGCTTGTGTTGGCAGAGTGGCAACGTGGGACGGAAATGATG
GACAATAGGATCTGGGCCCTGGCGCTGGACCATAGCGGAAGGACCCCTCCCTATAGG

CCAGAATTTC CAATTAGAGGAATT CAGTTATGATGGCCCCATCAACATCCAAA ACT
GCAC TTTCCGAAAGTTGTGGCCCTGGAGGGCCGGCACACCAGGCCCTGGCCTCCGC
CTGAATAATGCCTGGCAGAGCTGCCCCATAACAACGTGACCGGCATTGCCCTTGAGGA
CGTTCCGATTACTTCCAGAGTGTCTCGGAGAGCCTGGGCCCTGGTCAACCAGCTGG
ACATGGATGGGGATAAGACATCTGTGTTCCATGACGTGACGGCTCCGTGAGTAC
CCTGGCTCCTACCTCACGAAGAATGACA ACTGGCTGGTCCGGCACCCAGACTGCATCAA
TGTTCCCGACTGGAGAGGGCCATTG CAGTGGTGTATGCACAGATGTACATTCAAG
CCTACAAGACCA GAGTAACCTGCGAATGAAGATCATCAAGAATGACTTCCCCAGCCACCC
CTTACCTGGAGGGGGCGCTCAC CAGGAGCACCCATTACCA GCAATACCAACCGGTGT
CACCCCTGCGAAGGGCTACACC ATCCACTGGGACCAGACGGCCCCGCCGA CTCGCA
TCTGGCTCATCAACTTCAACAAGGGC ACTGGATCCGAGTGGGGCTCTGCTACCCGCGA
GGCACCACATTCTCCATCCTCTCGGATGTTACAATCGCCTGCTGAAGCAAACGTCCAA
GACGGGCGTCTCGT GAGGACCTTG CAGATGGACAAAGTGGAGCAGAGCTACCCGGCA
GGAGCCACTACTACTGGGACGAGGACTCAGGGCTGTTCTGAAGCTGAAAGCTCAG
AACGAGAGAGAGAAGTTGCTTCTGCTCCATGAAAGGCTGTGAGAGGATAAAGATTAA
AGCTCTGATTCCAAAGAACGCAGCGTCAGTGACTGCACAGCCACAGCTTACCCCAAGT
TCACCGAGAGGGCTGTCGTAGACGTGCCATGCCAAGAAGCTCTTGGTTCTCAGCTG
AAAACAAAGGACCATTCTGGAGGTGAAGATGGAGAGTTCCAAGCAGCACTCTTCCA
CCTCTGGAACGACTTCGCTTACATTGAAGTGGATGGGAAGAAGTACCCAGTTGGAGG
ATGGCATCCAGGTGGTGGT GATTGACGGAACCAAGGGCGCTGGTGAGCCACACGAGC
TTCAGGAAC TCCATTCTGCAAGGCATACCATGGCAGCTTTCAACTATGTGGGACCAT
CCCTGACAATTCCATAGTGCTTATGGCATCAAAGGGAAAGATA CGTCTCCAGAGGCCAT
GGACCAGAGTGTGGAAAAGCTTGGGGCAGACAGGGGTCTCAAGTTGAAAGAGCAATG
GCATTGCTTGGCTTCAAAGGCAGCTTCCGGCCATCTGGGTGACACTGGACACTGAGGA
TCACAAAGCCAAATCTTCCAAGTTGTGCCCATCCCTGTGGTGAAGAAGAAGTTGT
GAGGACAGCTGCCGCCGGTGCCACCTCGTGGTAGACTATG

Figure 4. Nucleic acid sequence of ColoUp2 (SEQ ID NO: 5)

CCCCCTGGCCCCAGCCGCCCGGGCTGTGAGTAGAGCCGCCGGCACCGAGCGCT
GGTCGCCGCTCTCCTCCGTTATATCAACATGCCCCCTTCCTGTTGCTGGAAGCCGTC
TGTGTTTCCTGTTCCAGAGTGCCCCATCTCTCCCTCTCCAGGAAGTCCATGTAAG
CAAAGAAACCATCGGAAGATTCAGCTGCCAGCAAAATGATGTGGTGTGCTGGCTGCAG
TGGACATCATGTTCTGTTAGATGGGTCTAACAGCGTCGGAAAGGGAGCTTGAAAGG
TCCAAGCACTTGCCATCACAGTCTGTGACGGTCTGGACATCAGCCCCAGAGGGTCAG
AGTGGGAGCATTCCAGTTCACTCCTCATCTGGAATTCCCCTGGATTCACTTT
CAACCCAACAGGAAGTGAAGGCAAGAATCAAGAGGATGGTTCAAAGGAGGGCGCAG
GAGACGGAACTTGCTCTGAAATACCTCTGCACAGAGGGTGCCTGGAGGCAGAAATGC
TTCTGTGCCCCAGATCCTCATCATCGTCACTGATGGGAAGTCCAGGGGGATGTGGCAC
TGCCATCCAAGCAGCTGAAGGAAAGGGGTGTCAGTGTGTTGCTGTGGGGTCAGGTT
CCCAGGTGGGAGGGAGCTGCATGCACTGGCCAGCGAGCCTAGAGGGCAGCACGTGCTGTT
GGCTGAGCAGGTGGAGGATGCCACCAACGGCCTCTCAGCACCCCTCAGCAGCTGGCCA
TCTGCTCCAGGCCACGCCAGACTGCAGGGTCAGGCTCACCCCTGTGAGCACAGGACG
CTGGAGATGGTCCGGGAGTTCGCTGGCAATGCCCATGCTGGAGAGGATCGCGCGGAC
CCTTGCGGTGCTGGCTGCACACTGTCCCTACAGCTGGAAGAGAGTGTCCCTAACCC
ACCCGCCACCTGCTACAGGACCACTGCCAGGCCAGGCTGTGACTCGCAGCCCTGCCAG
AATGGAGGCACATGTGTTCCAGAAGGACTGGACGGCTACCAAGTGCCTCTGCCGCTGGC
CTTGAGGGGAGGCTAACTGTGCCCTGAAGCTGAGCCTGGAATGCAGGGTCACCTCC
TCTTCCTGCTGGACAGCTCTGCCGGCACCACACTCTGGACGGCTTCTGCCGGCAAAGTC
TTCGTGAAGCGGTTGTGCGGGCCGTGCTGAGCGAGGACTCTCGGGCCGAGTGGGTGT
GCCACATACAGCAGGGAGCTGCTGGTGGCGGTGCTGTGGGGAGTACCAAGGATGTGC
CTGACCTGGCTGGAGCCTCGATGGCATTCCCTCCGTGGTGGGCCACCCCTGACGGGC
AGTGCCTTGCGGCAGGCCAGAGCGTGGCTTGGAGCGCCACCAGGACAGGCCAGGA
CCGGCACAGTAGAGTGGTGGTTTGCTCACTGAGTCACACTCCGAGGATGAGGTTGCC
GCCAGCGCGTACGCAAGGGCGAGAGCTGCTCCTGCTGGGTGTAGGCAGTGAGGCC
GTGCGGGCAGAGCTGGAGGAGATCACAGGAGCCAAAGCATGTGATGGTCTACTCGGA
TCCTCAGGATCTGTTCAACCAATCCCTGAGCTGCAAGGGAAAGCTGTGCAAGCCGGCAGC
GCCAGGGTGCCGGACACAAGCCCTGGACCTCGTCTCATGTTGGACACCTCTGCCCTCA
GTAGGGCCGAGAATTGCTCAGATGCAGAGCTTGTGAGAAGCTGTGCCCTCCAGTT
TGAGGTGAACCTGACGTGACACAGGTGGCCTGGTGGTGTATGGCAGCCAGGTGCAGA
CTGCCTCGGGCTGGACACCAAACCCACCGGGCTGCGATGCTGCCAGGCCATTAGCCAG
CCCCCTACCTAGGTGGGTGGCTCAGCCGGCACCGCCCTGCTGCACATCTATGACAA
AGTGTGACCGTCCAGAGGGTGCCGGCTGGTCTCCCAAAGCTGTGGTGTGCTCA
CAGGCCGGAGAGGCGCAGAGGATGCAGCCGTTCTGCCAGAAGCTGAGGAACAATGGC
ATCTCTGTCTGGCTGTGGCGTGGGCCCTGTCCTAACAGTGTGGGTCTGCCGGAGGCTTGC
AGGTCCCCGGATTCCCTGATCCACGTGGCAGCTTACGCCGACCTGCCGGTACCAACGG
ACGTGCTCATTGAGTGGCTGTGTGGAGAAGCCAAGCAGCCAGTCAACCTCTGCAAACCC
AGCCCGTGCATGAATGAGGGCAGCTGCGTCTGCAGAATGGGAGCTACCGCTGCAAGTG
TCGGGATGGCTGGAGGGCCCCACTGCGAGAACCGATTCTGAGACGCCCTGAGGCA
CATGGCTCCCGTGCAGGGAGGGCAGCAGCCGTACCCCTCCAGCAACTACAGAGAAGGCC
TGGGACTGAAATGGTGCCTACCTCTGGAATGTCTGTGCCAGGTCTTAAAGATGTC
TGCTTCCCGCCGTGGCAGGACCACTATTCTCACTGAGGGAGGAGGATGTCCCAACTGC
AGCCATGCTGCTTAGAGACAAGAAAGCAGCTGATGTACCCACAAACGATGTTGAA
AAGTTTGATGTGTAAGTAAATACCCACTTCTGTACCTGCTGTGCCCTGTTGAGGCTA

TGTCATCTGCCACCTTCCCTTGAGGATAAACAAAGGGGTCTGAAGACTAAATTTAGC
GGCCTGACGTTCCCTTGACACAATCAATGCTGCCAGAACATGTTGACACAGTAATG.
CCCAGCAGAGGCCTTACTAGAGCATCCTTGGACGG

Figure 5. Nucleic acid sequence of Osteopontin (SEQ ID NO: 6)

GCAGAGCACAGCATCGTCGGGACCAGACTCGTCTCAGGCCAGTTGCAGCCTTCTCAGCC
AAACGCCACCAAGGAAAACCTCACTACCATGAGAATTGCAGTGATTGCTTTGCTCC
TAGGCATCACCTGTGCCATACCAGTTAACAGGCTGATTCTGGAAAGTTCTGAGGAAAAG
CAGCTTACAACAAATACCCAGATGCTGTGCCACATGGCTAAACCTGACCCATCTCA
GAAGCAGAACATCTCCTAGCCCCACAGACCCCTCCAAGTAAGTCCAACGAAAGCCATGACC
ACATGGATGATATGGATGATGAAGATGATGATGACCATGTGGACAGCCAGGACTCCATT
GACTCGAACGACTCTGATGATGTAGATGACACTGATGATTCTACCAGTCTGATGAGTC
TCACCATTCTGATGAATCTGATGAACTGGTCACTGATTCCCACGGACCTGCCAGCAA
CCGAAGTTTCACTCCAGTTGCCCCACAGTAGACACATATGATGCCGAGGTGATAGT
GTGGTTATGGACTGAGGTCAAAATCTAAGAAGTTCGCAGACCTGACATCCAGTACCC
TGATGCTACAGACGGAGGACATCACCTCACACATGGAAAGCGAGGAGTTGAATGGTGCAT
ACAAGGCCATCCCCGTTGCCAGGACCTGAACGCCCTCTGATTGGACAGCCGTGGG
AAGGACAGTTATGAAACGAGTCAGCTGGATGACCAGAGTGCTGAAACCCACAGCCACAA
GCAGTCCAGATTATATAAGCGGAAAGCCAATGATGAGAGCAATGAGCATTCCGATGTGA
TTGATAGTCAGGAACTTCCAAAGTCAGCCGTGAATTCCACAGCCATGATTCACAGC
CATGAAGATATGCTGGTTGTAGACCCAAAAGTAAGGAAGAAGATAAAACACCTGAAATT
TCGTATTCTCATGAATTAGATAGTCATCTCTGAGGTCAATTAAAAGGAGAAAAAAT
ACAATTCTCACTTGCATTAGTCAAAAGAAAAATGCTTATAGCAAATGAAAGAG
AACATGAAATGCTTCTTCAGTTATTGGTTGAATGTGTATCTATTGAGTCGGAA
ATAACTAATGTGTTGATAATTAGTTAGTTGTGGCTTCATGGAAACCTCCGTAAAC
TAAAAGCTTCAGGGTTATGTCATGTTCAATTCTATAGAAGAAATGCAAACACTATCACTGT
ATTTTAATATTGTTATTCTCTCATGAATAGAAATTATGTAGAAGCAAACAAAATCT
TTTACCCACTTAAAAGAGAATATAACATTATGTCACTATAATCTTTGTTTTAA
GTTAGTGTATATTGTTGTGATTATCTTTGTGGTGTGAATAAAATCTTTATCTTGA
ATGTAATAAGAATTGGTGGTGTCAATTGCTTATTGTTCCCACGGTGTCCAGCAA
TTAATAAAACATAACTTTTACTGCCTAAAAAAAAAAAAAA

Figure 6. Nucleic acid sequence of ColoUp3 (SEQ ID NO: 7)

AAAGGGCAAGAGCTGAGCGAACACCGCCGCGTCGCGCAGCTGCTTCACCCCTC
TCTCTGCAGCCATGGGCTCCCTCGTGGACCTCTCGCTCTCCTCCTCCAGGTT
TGCTGGCTGCAGTGCCGCGGCTCCGAGCGCTGCCCGGGCGGTCTCAGGGAGGCTGAAGT
GACCTTGGAGGCGGGAGGCGCGGAGCAGGAGCCGCCAGGCCAGGGCTGGGAAAGTATTCA
TGGGCTGCCCTGGCAAGAGCCAGCTGTAGCACTGATAATGATGACTTCACTGTG
CGGAATGGCGAGACAGTCCAGGAAAGAAGGTCACTGAAGGAAGGAATCCATTGAAGAT
CTTCCCATCCAAACGTATCTTACGAAGACACAAGAGAGATTGGTGGTTGCTCCAATAT
CTGTCCCTGAAAATGGCAAGGGTCCCTCCCCAGAGACTGAATCAGCTCAAGTCTAAT
AAAGATAGAGACACCAAGATTTCTACAGCATCACGGGCCGGGGCAGACAGCCCCC
TGAGGGTGTCTCGCTGTAGAGAAGGAGACAGGCTGGTTGTTGAATAAGCCACTGG
ACCGGGAGGAGATTGCCAAGTATGAGCTTTGGCACGCTGTGTCAGAGAATGGTGC
TCAGTGGAGGACCCCATGAACATCTCCATCATCGTACCGACAGAACATGACCACAAGCC
CAAGTTACCCAGGACACCTCCAGGGAGTGTCTTAGAGGGAGTCCTACACCTACAATGGGTG
CTGTGATGCAGGTGACAGCCACGGATGAGGATGATGCCATCTACACCTACAATGGGTG
GTTGCTTACTCCCATCCATAGCCAAGAACCAAAGGACCCACACGACCTCATGTTCACCAT
TCACCGGAGCACAGGACCCCATCAGCGTATCTCCAGTGGCTGGACCGGGAAAAAGTCC
CTGAGTACACACTGACCATCCAGGCCACAGACATGGATGGGACGGCTCCACCACG
GCAGTGGCAGTAGTGGAGATCCTGATGCCAATGACAATGCTCCCATGTTGACCCCCA
GAAGTACGAGGCCCATGTGCTGAGAATGAGCTGGCCATGAGGTGACAGGGCTGACGG
TCACTGATCTGGACGCCCAACTCACAGCGTGGCGTGCACCTACCTTATCATGGC
GGTGACGACGGGACCATTTACCATCACCAACCCACCTGAGAGCAACCAGGGATCCT
GACAACCCAGGAAGGTTGGATTTGAGGCCAAAACCAGCACACCCGTACGTTGAAG
TGACCAACGAGGCCCTTTGTGCTGAAGCTCCAACCTCACAGCCACCATAGTGGTC
CACGTGGAGGATGTGAATGAGGCACCTGTGTTGTCACCCACTCCAAGTCGTTGAGGT
CCAGGAGGGCATCCCCACTGGGAGCCTGTGTCACACTGCAGAACAGCCTGACA
AGGAGAATCAAAAGATCAGTACCGCATCTGAGAGACCCAGCAGGGTGGCTAGCCATG
GACCCCAGACTGGCAGGTACAGCTGTGGCACCCCTCGACCGTGAGGATGAGCAGTT
TGTGAGGAACAAACATCTATGAAGTCATGGTCTTGGCCATGGACAATGGAAGCCCTCCCA
CCACTGGCACGGAACCTTCTGCTAACACTGATTGATGTCATGACCATGGCCAGTC
CCTGAGCCCCGTCAGATCACCATCTGCAACCAAAGCCCTGTGCGCCAGGTGCTGAACAT
CACGGACAGGACCTGTCTCCCCACACCTCCCTTCCAGGCCAGCTCACAGATGACT
CAGACATCTACTGGACGGCAGAGGTCAACGAGGAAGGTGACACAGTGGTCTTGTCCCTG
AAGAAGTTCTGAAGCAGGATACATATGACGTGCACTTCTGTCTGACCATGGCAA
CAAAGAGCAGCTGACGGTATCAGGCCACTGTGTGCGACTGCCATGGCAGTCAGGAA
CCTGCCCTGGACCCCTGGAAAGGGAGGTTCATCCTCCCTGTGCTGGGGCTGTCCCTGGCT
CTGCTGTTCTCTGCTGGTGTGCTTTGTTGGTGAGAAAGAAGCGGAAGATCAAGGA
GCCCCCTCCTACTCCCAGAAGATGACACCCGTGACAACGTCTTACTATGGCGAAGAGG
GGGGTGGCGAAGAGGACCAAGGACTATGACATCACCCAGCTCCACCGAGGTCTGGAGGCC
AGGCCGGAGGTGGTCTCCGCAATGACGTGGCACCAACCACATCCCGACACCCATGTA
CCGTCTCGGCCAGCCAACCCAGATGAAATCGGCAACTTTATAATTGAGAACCTGAAGG
CGGCTAACACAGACCCACAGCCCCGCCCTACGACACCCCTTGGTGTGACTATGAG
GGCAGCGGCTCCGACGCCGCTCCCTGAGCTCCCTCACCTCCTCCGCTCCGACCAAGA
CCAAGATTACGATTATCTGAACGAGTGGGGCAGCCGCTCAAGAACGCTGGCAGACATGT
ACGGTGGCGGGAGGACGACTAGGCGGCCCTGCAGGCTGGGACCAACGTCAGG
CCCACAGAGCATCTCCAAGGGTCTCAGTTCCCCCTCAGCTGAGGACTTCGGAGCTTGT

CAGGAAGTGGCCGTAGCAACTTGGCGGAGACAGGCTATGAGTCTGACGTTAGAGTGGTT
GCTTCCTTAGCCTTCAGGATGGAGGAATGTGGGAGTTGACTTCAGCACTGAAAACC
TCTCCACCTGGGCAGGGTTGCCTCAGAGGCAAGTTCCAGAAGCCTTACCTGCCG
TAAAATGCTCAACCCCTGTGTCCTGGGCCTGGGCCTGCTGTGACTGACCTACAGTGGACT
TTCTCTCTGGAATGGAACCTTCTTAGGCCTCCTGGTCAACTTAATTTTTTTTAAT
GCTATCTCAAAACGTTAGAGAAAGTTCTCAGGCAACTTAATTTTTTTAAT
ACTGGCCGTCTGCATTCTGGTTCCAGACCCCAATGCCTCCATTGGATGGATCTC
TGCGTTTTATACTGAGTGTGCCTAGGTTGCCCTTATTTTTATTTCCCTGTTGCGT
TGCTATAGATGAAGGGTGAGGACAATCGTGTATGTACTAGAACTTTTTATTAAAGA
AACTTTCCCAGAAAAAAA

Figure 7. Nucleic acid sequence of ColoUp4 (SEQ ID NO: 8)

ATGAAGCACCTGAAGCGGTGGTCGGCCGGCGGCCTCCTGCACCTCACCCCTCCT
GCTGAGCTTGGCGGGCTCCCGTAGACCTAGATCTTACCTGCTGCTGCCGCC
CCCTGCTGCAGGACGAGCTGCTGTTCCCTGGCGGCCAGCTCCGCCTACGCGCTC
AGCCCCTCTCGGCCTCGGGAGGGTGGGGCGCGCGGGCCACTTGACACCCAAAGGGCG
GGAGCTGGACCTGCCGCCGCCCCAGGGCAGCTGCTCCGGAGGTGCGCGCTCG
GGGTCCCCCTCGTCCCTCGCACCAGCGTGGATGCATGGCTGGTGCACAGCGTGGCTGCC
GGGAGCGCGGACGGAGGCCACGGGCTGCTCGCGCCGCCCTCGTCCACCGGAGG
AGCCGGGCCAGCGTGGACGGCGCAGCCAGGCTGTGCAGGGGGCGGGACCCCC
GAGCGGCTCGGAGTGGCCCTTGGACGCCGGGAAGAGGAGAAGGCACCCGCGAACCG
ACGGCTCAGGTGCCGGACGCTGGCGATGTGCAGGGAGGAGAATGGGTACTAAGAGA
AAAGCACGAAGCTGTGGATCATAGTTCCCAGCATGAGGAAATGAAGAAAGGGTGTCA
CCCAGAAGGAGAACTCACTCAGCAGAATGATGATGATGAAAACAAAATAGCAGAGAAA
CCTGACTGGGAGGCAGAAAAGACCACTGAATCTAGAAATGAGAGACATCTGAATGGGAC
AGATACTTCTTCTCTGGAAAGACTTATTCCAGTTGCTTCATCACAGCCTGAAAATT
CACTGGAGGGCATCTCATGGGAGATATTCTCTCCAGGCAGTATCAGTGTGGCATG
AATTCTCAGCACATTATCATGAACTTCAGCCAGGCTATAAGTCAGGATGTGAATCT
TCATGAGGCCATCTGCTTGCCAAACAATACATTAGAAGAGATCCAACAGCAAGGA
CTTCACAGTCACAAGAACCATTTCTGCAGTTAAATTCTCATACCACCAATCCTGAGCAA
ACCCCTCCTGGAACTAATTGACAGGATTCTTCAACGGGTGACAATCATATGAGGAA
TCTAACAAAGCCAAGACCTACTGTATGACCTTGACATAAATATTTGATGAGATAA
TAATGTCATTGGCCACAGAACAACTTTGATCCAATCGATGTTCTCAGCTTTGAT
GAACCAAGATTCTGATTCTGGCCTTCTTAGATTCAAGTCACAATAAACCTCTGTCA
CAAGTCTAATTCTCTCACTCTGTTGATGAAGGTGCTATAGTTATTGCACTGACC
ATGAATCTAGTTCCCACATGACTTAGAAGGTGCTGTAGGTGGCTACTACCCAGAACCC
AGTAAGCTTGTCACTGGATCAAAGTGATTCTGATTCCATGGAGATCTTACATTCA
ACACGTATTCATAACCAACACTTACCAACTACAGCCAATGCAACAGAACATCTACTCTG
AACCTTTCCGTGGCCTGGGAAGTCACAGAACAGATAAGGAGTAGATAACCTTGAAGAAC
GATAGAAACTTGAGCCGTGATGAACAGCGTCTAAAGCTTGCATATCCCTTTCTGT
AGATGAAATTGTCGGCATGCCTGTTGATTCTTCAATAGCATGTTAAGTAGATATTATC
TGACAGACCTACAAGTCTCACTTATCGTGACATCAGACGAAGAGGGAAAATAAGTT
GCTGCCAGAACGTGCTAAACGCAAATTGGACATAATTTGAATTAGAAGATGATGT
ATGTAACTTGCAAGCAAAGAAGGAAACTCTTAAGAGAGAGCAAGCACAATGTAACAAAG
CTATTAACATAATGAAACAGAAACTGCATGACCTTATCATGATATTTTAGTAGATTA
AGAGATGACCAAGGTAGGCCAGTCAATCCACCAACTATGCTCTCCAGTGTACCCATGA
TGGAAAGTATCTGATAGTACCCAAAGAACCTGGTGGCCTCAGGCCACAAAAGGAAACCC
AAAAGGAAAGAGAAAGTGAGAAGAAACTGGAAGATGGACTCTATTATGTGAAGTAGTAA
TGTTAGGACTTCAAGATCACACTTGTGGCAATCTGGGGAGCCACAACCTTCTATGAA
GTGCATTGTATACAAATTCTAGTTATGTCAAAGAACATGGTTAACATGAAAACCCAG
TAAGACTTTCCATCTGGCAGCCATCCTTTAAAGAGTAAGTTGGTTACTTCAAAAAGA
GCAAACACTGGGATCAAATTATTTAAAGAGGTATTCAGTTAAATGCAAATAGCC
TTATTTCATTTAGTTGTTAGCACTATAGTGAGCTTCAACACTATTTAATCTT
ATATTAACTTATAAAATTGCTTCTATGAAATAAATTGTATTGTATTTAAAAAA
AAAAAAA

Figure 8. Nucleic acid sequence of ColoUp5 (SEQ ID NO: 9)

ATGAAGTTGGAGGTGTTCGCCCTCGCGCGGCCACGGGACAAGCAGGGCAGTGACCT
GGAGGGCGCGGGCGGCAGCGACCGCGTCCCGCTGCGGCGGGAGACGACTCCC
TGGGCTCAGATGGGACTGCGCGGCCAAGCGTCCGCGGGCGGCCAGAGATA
CAGGGCGACGGCGAACAGAGTGCGGGAGGCGGGCGGGAGGAGGGCGATCCGGC
AGCAGCTGCTGCAGCGGTGGTGGCGGAGGGCGCGAGGCGGGCGGGCCAGGCG
CGGGCGGGCGGGGAGCGGGAGGGTGCACGCAGCAAGCCATATACGCGGGGCCAAG
CCCCCCTACTCGTACATCGCGCTCATGCCATGGCCATCCGCGACTCGGCGGGCG
CTTGACGCTGGCGGAGATCAACGAGTACCTCATGGCAAGTTCCCCTTTCCGCG
GCTACACGGGCTGGCGCAACTCCGTGCGCCACAACCTTCGCTCAACGACTGCTCG
AAGGTGCTGCGGACCCCTCGCGGCCCTGGGCAAGGACAACACTGGATGCTAACCC
AACACAGCGAGTACACCTCGCCGACGGGTCTTCCGCCCGCCGCAAGCGCCTCAGCC
ACCGCGGCCGGTCCCCCGCCGGCTCGGGCCCTCGCCCCGATGCGCTCGCCGCC
GCCCCGCCGCCCGCCGCCGCCGCCCTCGCCCCGATGCGCTCGCCGCC
GGAGGAGCGCGCAGCCCCGGCAAGTTCTCCAGCTCCTCGCCATGACAGCATCC
TGCAGGCCCTCCGAGCGTCGCTCAGGGACACGGCCCCGGGACGACGCTTCAG
TGGGGCGCCGCGCCCTGCCCCGCTGCCCCGTTCCCCGCGCTCCTCCCCGCGGCC
CTGCAAGGGCCCTGCTGCCGCTTGCGCGTACGGCGGGCGAGCCGGCGGCTGGCG
CGCGCGAGGCCGAGGTGCCACCGACCGCGCCGCCCTCCTGCTTGACCTCTCCGGCG
GCGGCCCGCAAGCCACTCCGAGGCCGGCGGCCGGCGCACCTGTACTGCC
CCTGCGGCTGCCCGAGCCCTGCAGGCCCTTAGTCCGNCGTCCTGGCCGACCTGT
CGTACCCGGTGGAGACGCTCCTAGTTGA

Figure 9. Nucleic acid sequence of ColoUp6 (SEQ ID NO: 10)

GGCAGATGAAATATAAGATTCAACCACATTGACAGCCATGGCAGGTTCTGTT
TTCCATCGTCCCTCTGCAGGTACAGACACACAGAGCCCAGCCGTGGCAGGCTAGCCG
GGGTCCGGGGCTGCTAACAAACGGCTACATTCTCCCCAGGGCAAGGGAAATCCTGAG
CGCAGGCCAGGGTTGTTGGTTTGAGGTGTGCTGGATGAAAGGCACCCCTGGAAGTGG
AAGGTTCGGTCAATTAAATTACATCTATAATTGAGGGTTGTTCTTAAGAGCG
AGTCCTTGAAGTACTTCCTCAAACAGTGACTGCCACAAAGGCATCAGATATTCAC
CACCTTCTCGGCTGCCTCAGCACAGCAAGCTTATTCTGGACCTGAGATCCTGTTCTG
AGCTGGCTTCCCTCTCAGGCTCGCTACCCCTCCCTTAGAGATAGTGGATGGTAAG
ATGACCAATGCTCAGATTATTCTCTCATTGACAATGCCAGGATGGCAGTGGATGACTT
CAACCTCAAGAAATGGGAGAAGCATCATGTGCCAAGTGACTTCATGTCAATGTGAAGGT
GGATACAGGTCCCAGGGAAAGATCTGATTAAGGTCTGGAGGATATGAGACAAGAATATG
AGCTTATAATAAAGAAGAAGCATCGAGACTTGGACACTTGGTATAAAGAACAGTCTGCA
GCCATGTCCCAGGAGGCAGCCAGTCCAGCCACTGTGCAGAGCAGACAAGGTGACATCCA
CGAACTGAAGCGCACATTCCAGGCCCTGGAGATTGACCTGCAGGCACAGTACAGCACGA
AATCTGCTTGGAAAACATGTTATCCGAGACCCAGTCTCGGTACTCCTGCAAGCTCCAG
GACATGCAAGAGATCATCTCCACTATGAGGGAGGAAGTGACCGCAGCTACGCCACGA
GGAGCGGCAGAACATGAATACCAAGTGCTGGCATCAAAACCCACCTGGAGAAGG
AAATCACCACGTACCGACGGCTCCTGGAGGGAGAGAGTGAAAGGACACGGGAAGAATCA
AAGTCGAGCATGAAAGTGTCTGCAACTCCAAAGATCAAGGCCATAACCCAGGAGACCAT
CAACGGAAAGATTAGTTCTTGTCAAGTGAATGAAATCCAAAGCACGCATGAGACCAAT
GAAAGTTCCGCCTGTTGTAAGGAAAGTCCTGCACAGACAC
CACTGAGTGAGTTCTAAAGATAACCCTGAAATTATCAGACTCAGAAACTTTATTTT
TTTTCTGTAACAGTCTCACCAGACTTCTCATAATGCTCTTAATATATTGCACTTTCT
AATCAAAGTGCAGTTATGAGGGTAAAGCTCTACTTCCTACTGCAGCCTCAGATT
TCATCATTTGCATCTATTTGTAGCCAATAAAACTCCGCACTAGCAAAAAAA

Figure 10. Nucleic acid sequence of ColoUp7 (SEQ ID NO: 11)

TTTTTTTTAAAAAGAGGCTTGGTAAGTTTGATGCTTAGTTGACTTTAGCATT
ATCCAGCATTGTATTATGAACCAGTGAGTACTGTAATTTCTTCCTTCAGAAAG
ACTCAAAGGGAACATATAATGTTCTATTAAATGTGGCAATAGTGTAGCTAACAC
TGGTACAGACGGAATAAACACACCTCTAATATTCTCCTGAAGATTGGTGATCCAGTT
CAAATAAGGTATGGGAAAAACAGATGTTTCAATTATGCCACTTAATCCTTAACCCGA
TTATAATTATACATGTTGGCTGTAATAACTATACTAAAGCATGCTTGTGAAAGTAGAC
TTCTACAAGGACAGAAAACCCACAACAACAAAGATCGATCACGAAAGACAAGGCATA

Figure 11. Nucleic acid sequence of ColoUp8 (SEQ ID NO: 12)

CTTTCTTCCGACGGTGAGGAGGTGGCTGGTTATCGGGAGTTGGAGGGCTGAGGT
CGGGAGGGTGGTGTACAGAGCTAGGACTCACGCACCAGGCCAGTCGCGGATTTG
GCCGAGGCCTGGTTACAAGCAGCAAGTGCAGCGGTGGGCCACTGCAGGCCGTTT
AGAAAACGTAAACAAAGAGCAATTGATGGATAATCAGGAATAGATTCTCTTGAC
CATGTGACATCTGATGCTGTGGAACCTGCAAATCGAAGTGATAACTCTCTGATAGCAG
CTTATTTAAACACTCAGTGTATCCCTAATCACCTAAAGGGAGAAAAGAAACCCATT
GAAAATTGTCGTACACCTGAAAGTGTACGCAAGTGATTCAAGTGACTCATCT
TTTGAACCAATACCATTGACTATAAAAGCTATTTGAAAGATTCAAGAACAGGAAAAA
GAGATATAAAAAAAGAAAAAGAGGGAGGTACCGCAACAGGAAGACCACGGGAAGAC
CAGAAGGAAGGAGAAATCTATATACTCACTAATAGATAAGAACAAACATTAGAAC
AGAGGATCTGGCTCCCATTTAGAATCAGAGAATGAAAAAACGCACCTGGAGAAA
AATTTAACGTTGAGCAAGCTGTGCAAGAGGATTTTAACATATTGAAAAGCTGA
AGTATGAACACCTGAAAGAACATTGAAGCAAATGAATGTTGGTGAAGATTTAGAA
AATGAAGATTTGACAGTCGTAGATACAAATTGGATGATGATGGATCCATTCTCC
TATTGAGGAGTCAACAGCAGAGGATGAGGATGCAACACATCTGAAGATAACGAATGTG
ATATCAAATTGGCAGGGATAGTTCATAGTAAGTTCTGAATTCCCTGTAAGACTGAGT
GTATACTTAGAAGAAGAGGATATTACTGAAGAACGCTGTTGTCTAAAAGAGAGCTAC
AAAAGCCAAAATACTGGACAGAGAGGCCTGAAAATGTGACAGGATCATGAATGTCAA
GGCTTTATCTTGAGAACATGGTGTCTGGAGTTAAAGGTATTGGCATACTCCACACATC
TGTACCATCTTGAGTGATCGCTTAGGAATGAATGTGATTGAACTCATTGATGAG
AGGGTGTCAAATTGAGAACCCAGGTAGATCCCCACCCACCTACAGTAAAAGGACCTAAA
GTAAATTGGTTGAAGAAATTAGATCCCAAAGATTCTGGTGAATTGAAAGTCTTCATC
AGTATATCCATATTAAACGAGATGACAGAACAGCTAAAGTAATTGGCAAGTAATGGTT
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AATGCAGTTCTCATTTGCTGTGGACATGACCATAAAAAAAATTCCAGTAGGTTT
CTATCTGCTACGTTGCTAGCAATCAGTTATTGGAACAGTTGATTAACGTAAAGATA
ATGCAATACAATAAAATGTGAACCACATGTGATTCTTAAAATCAGTGAGATTG
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TGTGGGTTGCTAATAACCAAGCAGTTGAGAGTTAACTCAGGCTCGTTCTAGGGA
CTCATTGATGTCACTCACTGTACACTCATCTGGAAATGTAATTTACTTTATAC
TATTGTTATGTAGGGCTGACAGGACAATGGATCAGTTCTTAAAGGTATGTATGC
ATTAGAAAAGACATTGTATGGTCATTCAAAGAGGGCTTATGAGGCTGTGAAACCCA
GAGCTCTAACGCTGTGACCAAGATGGAAGTTCTATAGGAAGCCATAGCACTCCTA
ATGTTGGTGTATGTTCTGAGGAGATAAAACGTAATAATCCATGATTGTTGCC
ATGTGAGAGTTAAAGGTTAATCAAATTCCTCTCAGGGCAAATGAAAGATA
ATCTTTGACTCCAGCTTTAGAGGATCTAAAGTGACCTGATGGACAGTGAAAGAAA
TCACAACATGGAATTCCCTCGAATAACAATTATTGACTTTAAATAATTGCTAATGC
TACATATACACAATTAAAAACCTTACACTATTCTAGAAAGTCAGCATGTATTTG
GCTCGAAGTTCTCTAGTGTGTTCTGAGGAATAAAAATTGAGTTCAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAA

Figure 12. Amino acid sequence of full-length ColoUp1 protein (SEQ ID NO: 13)

MGAAGRQDFLFKAMLTISWLTLCFPGATSTVAAGCPDQSPELQPWNPGHDQDHVHIG
QGKTLLLTSSATVYSIHISEGGKLVIKDHDEPIVLTRHILIDNGGELHAGSALCPFQG
NFTIILYGRADEGIQPDIFYGLKYIGVGKGGALELHGQKKLSWTFLNKTLPGGMAEGG
YFFERSWGHRGVIVHVIDPKSGTVIHSDFDTYRSKESERLVQYLNAPDGRILSVAV
NDEGSRNLDLDDMARKAMTKLGSKHFLHLGFRHPWSFLTAKGNPSSVEDHIEYHGRGSA
AARVFKLFQTEHGEYFNVSLSSSEWVQDVEWTEFDHDKVQTKGEKISDLWKAHPGKI
CNRPIDIQATTMDGVNLSTEVVYKKQDYRFACYDRGRACRSYRVRFLCGKPVPKLTV
TIDTNVNSTILNLEDNVQSWKPGDTLVIASTDYSMYQAEFQVLPCRSCAPNQVKVAGK
PMYLHIGEEIDGVDMRAEVGLLSRNIIVMGEMEDKCYPYRNHICNFFDFDTFGGHIKFA
LGFKAAHLEGTELKHMGQQLVGQYPIHFHLAGDVDERGGYDPPTYIRDLSIHHTFSRCV
TVHGSNGLLIKVGVGYNLSLGHCFTEGPEERNTFDHCLGLLVKSGTLLPSRDRSKMCK
MITEDSYPGYIPKPRQDCNAVSTFWMANPNNNLINCAAAGSEETGFWFIFHHVPTGPSV
GMYSPGYSEHIPLGKFYNNRAHSNYRAGMIIDNGVKTTEASAKDKRPFLSIISARYSPH
QDADPLKPREPAIIRHFIAYKNQDHGAWLRGGDVLDSCRFAADNGIGLTLASGGTFPYD
DGSKQEIKNSLFVGESGNVGTEMMDNRIWGPGLDHSGRTLPIGQNFPIRGIQLYDGPI
NIQNCTFRKFVALEGRHTSALAFRLNNAWQSCPHNNVTGIAFEDVPITSRVFFGEPGPW
FNQLDMGDKTSVFHDVDSVSEYPGSYLTKNDNWLVRHPDCINVPDWRGAIICSGCYAQ
MYIQAYKTSNLRMKIIKNDFPSHPLYLEGALTRSTHYQQYQPVTLQKGYTIHWDQTAP
AELAIWLINFNKGDWIRVGLCYPRGTTFSILSDVHNRLLKQTSKTGVFVRTLQMDKVEQ
SYPPGRSHYYWDEDSGLLFLKLKAQNEREKFAFCSMKGcerIKIKALIPKNAGVSDCTAT
AYPKFTERAVVDVPMPPKKLFGSQLKTKDHFLEVKMESSKQHFFHLWNDFAYIEVDGKKY
PSSEDGIQVVVIDGNQGRVVSHTSFRNSILQGIPWQLFNYVATIPDNSIVLMAKGRYV
SRGPWTRVLEKLGADRGLKLKEQMAFVGFKGSFRPIWVTLDTEDHKAKIFQVVPPIPVK
KKKL

Figure 13. Amino acid sequence of full-length ColoUp2 protein (SEQ ID NO: 14)

MPPFLLLEAVCVFLFSRVPPSLPLQEVHVKETIGKISAASKMMWCSAAVDIMFLLDGS
NSVGKGSFERSKHFAITVCDGLDISPERVRVGAQFQSSTPHLEFPLDSFSTQQEVKARI
KRMVFKGGRTETELALKYLLHRGLPGGRNASVPQILIIIVTDGKSQGDVALPSKQLKERG
VTVFAVGVRFPRWEELHALASEPRGQHVLLAEQVEDATNGLFSTLSSAICSSATPDCR
VEAHPCEHRTLEMVREFAGNAPCWRSRRTLAVLAACPFYSWKRVFLTHPATCYRTTC
PGPCDSQPCQNGGTCVPEGLDGYQCLCPLAFGGEANCALKLSLECRVDLLFLLDSSAGT
TLDGFLRAKVFVFKRFVRAVLSEDSRARVGATYSRELLVAVPVGEYQDVPDLVWSLDGI
PFRGGPTLTGSALRQAAERGFGSATRTGQDRPRVVLLTESHSEDEVAGPARHARARE
LLLLGVGSEAVRAELEEITGSPKHVMVYSDPQDLFNQIPELQGKLCRQPGCRTQALD
LVFMLDTSASVGPENFAQMGSFVRSCALQFEVNPDTQVGLVVYGSQVQTAFGLDTKPT
RAAMLRAISQAPYLGGVGSAGTALLHIYDKVMTVQRGARPGVPKAVVVLTGGRGAEDAA
VPAQKLRNNGISVLLVGVGPVLSEGLRRLAGPRDSLIIHVAAYADLRYHQDVLIEWLCGE
AKQPVNLCKPSPCMNEGSCVLQNGSYRCKCRDGWEGPHCENRFLRRP

Figure 14. Amino acid sequence of full-length Osteopontin protein (SEQ ID NO: 15)

MRIAVICFCLLGITCAIPVKQADSGSSEEKQLYNKYPDAVATWLNPDPHQKQNLAPQT
LPSKSNEHDHMDDMDDEDDDHVDSQDSIDSNDSDVDDTDDSHQSDESHHSDESDEL
VTDFPTDLPATEVFTPVPTVDTYDGRGDSVYGLRSKSKKFRRPDIQYPDATDEDITS
HMESEELNGAYKAI PVAQDLNAPSDWDSRGKDSYETSQLDDQSAETHSHHKQSRLYKRKA
NDESNEHSDVIDSQELSKVSREFHSHEFHSHEDMLVVDPKSKEEDKHLKFRISHELDA
SSEVN

Figure 15. Amino acid sequence of full-length ColoUp3 protein (SEQ ID NO: 16)

MGLPRGPLASLLLLQCVWLQCAASEPCRAVFREAEVTLEAGGAEQEPEQGQALGKVFMGCP
QEPEALFSTDNDDFTVRNGETVQERRSLKERNPLKIFPSKRILRRHKRDVVAPISVPE
NGKGPFPQQLNQLKSNKDRDTKIFYISITGPGADSPPEGVFAVEKETGWLLLNLKPLDREE
IAKYELFGHAVSENGASVEDPMNISIIVTDQNDHKPKFTQDTFRGSVLEGVLPGTSVMQ
VTATDEDDAIYTNGVVAYSIHQSPEPKDPHDLMTIHRSTGTISVISSGLDREKVPPEYT
LTIQATDMDGDSSTTAVAVVEILDANDNAPMFDPQKYEAHVPENAVGHEVQRLTVTDL
DAPNSPAWRATYLIIMGGDDGDHFTITTHPESNQGILTTRKGGLDEAKNQHTLYVEVTNE
APFVLKLPTSTATIVVHVEDVNEAPVFVPPSKVVEVQEGIPTGEPVCVYTAEDPDKENQ
KISYRILRDPAGWLAMPDSGQVTAVGTLDREDEQFVRNNIYEVMLAMDNGSPPTTGT
GTLLLTLIDVNDHGPVPEPRQITICNQSPVRQVLNITDKDLSHTSPFQAQLTDDSDIY
WTAEVNEEGDTVVLSSLKKFLKQDTYDVHLSLSDHGNKEQLTVIRATVCDCHGHVETCPG
PWKGFFILPVLGAVLALLFLLLVLRLRKRRKIKEPLLLPEDDTRDNVFYYGEEGGGE
EDQDYDITQLHRGLEARPEVVLRNDVAPTIIPTPMYRPRPANPDEIGNFIIENLKAANT
DPTAPPYDTLLVFDYEGSGSDAASLSSLTSSASDQDQDYDYLNEWGSRFKKLADMYGGG
EDD

Figure 16. Amino acid sequence of full-length ColoUp4 protein (SEQ ID NO: 17)

MKHLKRWWsAGGGLLHLLSLAGLRVDLDLYLLLPPPTLLQDELLFLGGPASSAYAL
SPFSASGGWGRAGHLHPKGRELDPAAPPEGQLLREVRALGVPFVPRTSVDALVHSVAA
GSADEAHGLGAAAASSTGGAGASVDGGSQAVQGGGGDPRARSGPLDAGEEEKAPAE^P
TAQVPDAGGCASEENGVLREKHEAVDHSSQHEENEERVSAQKENS^LQQNDDDENKIAEK
PDWEAEKTTESRNERHLNGTDTFSLEDFQQLLSSQENSLEGISLGDIPLPGSISDGM
NSSAHYHVNFSQAI^SQDVNLHEA^ILLCPNNTFRRDPTARTSQSQEPFLQLNSHTTNPEQ
TLPGTNLTGFLSPVDNHMRNLT^SQDLYDLDINIFDE^INLMSLATEDNFDPIDVSQ^LFD
EPDSDSGLSLDSSHNNNTSVIKSNSSH^SVCDEGAIGYCTDHES^SSHDLEGAVGGYY^{PEP}
SKLCHLDQSDSDFHGDLTFQHVFHNHTYHLQPTAPESTSEPF^PWPGKSQKIRSR^YLED^T
DRNLSRDEQR^AKALH^IIPFSVDEIVGMPVDSFNSMLSR^YYLTDLQVSLI^RDIRRGKNKV
AAQNCRKRKLD^II^ILNLEDDVCNLQAKKETLKREQAQC^NKAINIMKQKLHDLYHDI^FSRL
RDDQGRPVNP^NHYALQCTHDGSILIVPKELVASGHKKETQKGKRK

Figure 17. Amino acid sequence of full-length ColoUp5 protein (SEQ ID NO: 18)

MKLEVFPRAHGDQGSDLEGAGGSDAPSPLSAAGDDSLGSDGDCAAKPSAGGGARDT
QGDGEQSAGGGPGAEAEIPAAAAAAVVAEGAEAGAAGPGAGGAGSGEGARSKPYTRRPK
PPYSYIALIAMAIRDASAGGRRTLAEINEYLMGKFPFFRGSYTGWRNSVRHNLSLNDCFV
KVLRDPSRPWGKDNYWMLNPNSEYTFADGVFRRRKRLSHRAPVPAPGLRPEEAPGLPA
APPPAPAPASPRMRSPARQEERASPAGKFSSSFAIDSILRKPFRSRRLRDTAPGTLQ
WGAAPCPPLPAFPALLPAAPCRALLPLCAYGAGEPARLGAREAEVPPTAPLLLAPLPA
AAPAKPLRGPAAGGAHLYCPLRLPAALQAALVRRPGPHLSYPVETLLA

Figure 18. Amino acid sequence of full-length ColoUp6 protein (SEQ ID NO: 19)

MEKHHVPNSDFNVNVKVDTGPREDLIKVLEDMRQEYELI I KKKHRDLDTWYKEQSAAMSQ
EAASPATVQSRQGDIHELKRTFQALEIDLQAQYSTKSALENMLSETQSRYSCKLQDMQE
IISHYEEELTQLRHELERQNNEYQVLLGIKTHLEKEITTYRRLLEGESEGTREESKSSM
KVSATPKIKAITQETINGRLVLCQVNEIQKHA

Figure 19. Amino acid sequence of full-length ColoUp8 protein (SEQ ID NO: 20)

MDKSGIDS LDHVTSDA VELANR SDNSSD SSLFKTQCIP YSPKGEKR NPIRKF V RTPESV
HASDSSSDSSF EPIPLTIKA IFERFK NRKKRYKKKKR RYQPTGRPRGRPEGRRNPIYS
LIDKKKQFRSRGSGFPFLESENEKNAPWRKILTFEQAVARGFFNYIEKLKYEHHLKESL
KQMN VGEDLENEDFDSR RYKFLDDGSISPIEESTA EDEDATHLEDNECDIKLAGDSFI
VSSEFPVRLSVYLEEEDITEEAALSKKRATKAKNTGQRGLKM

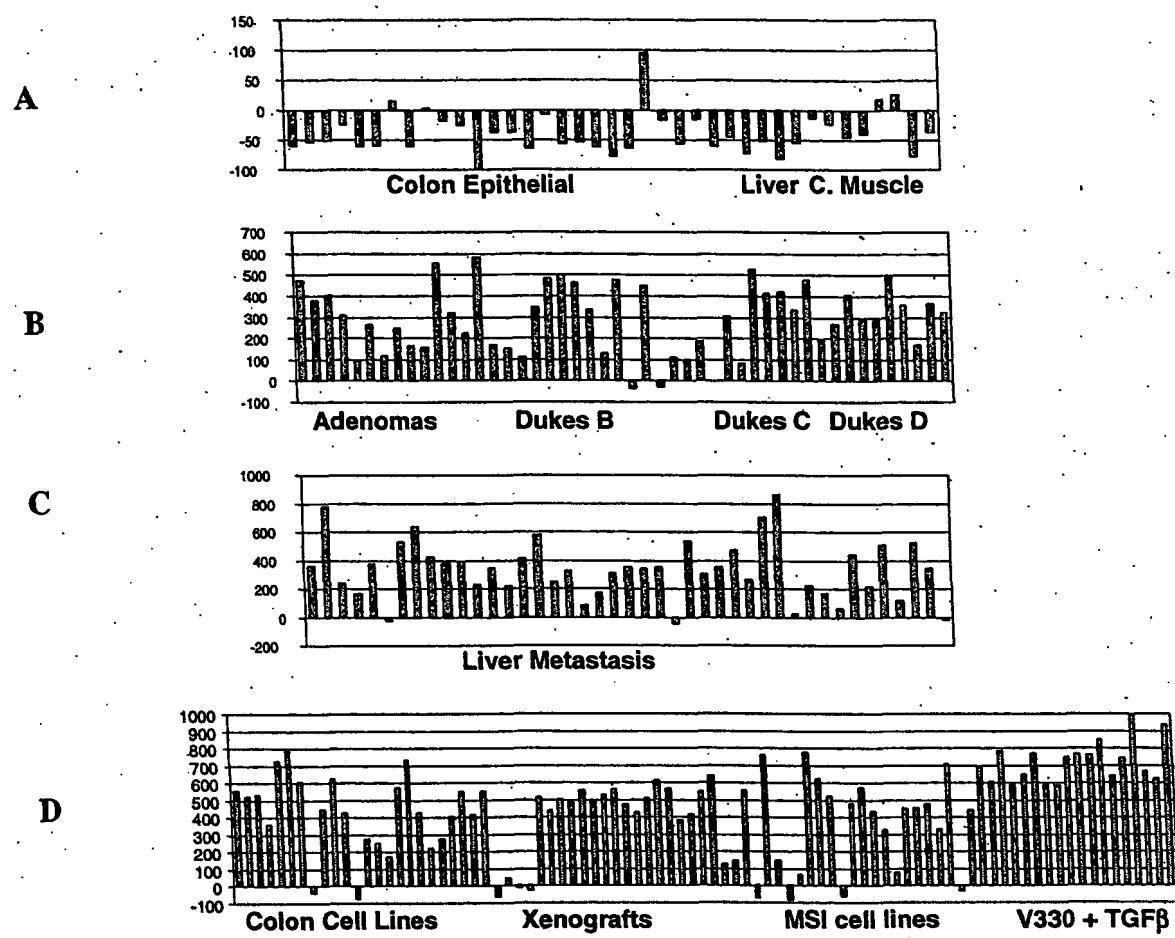


Figure 20

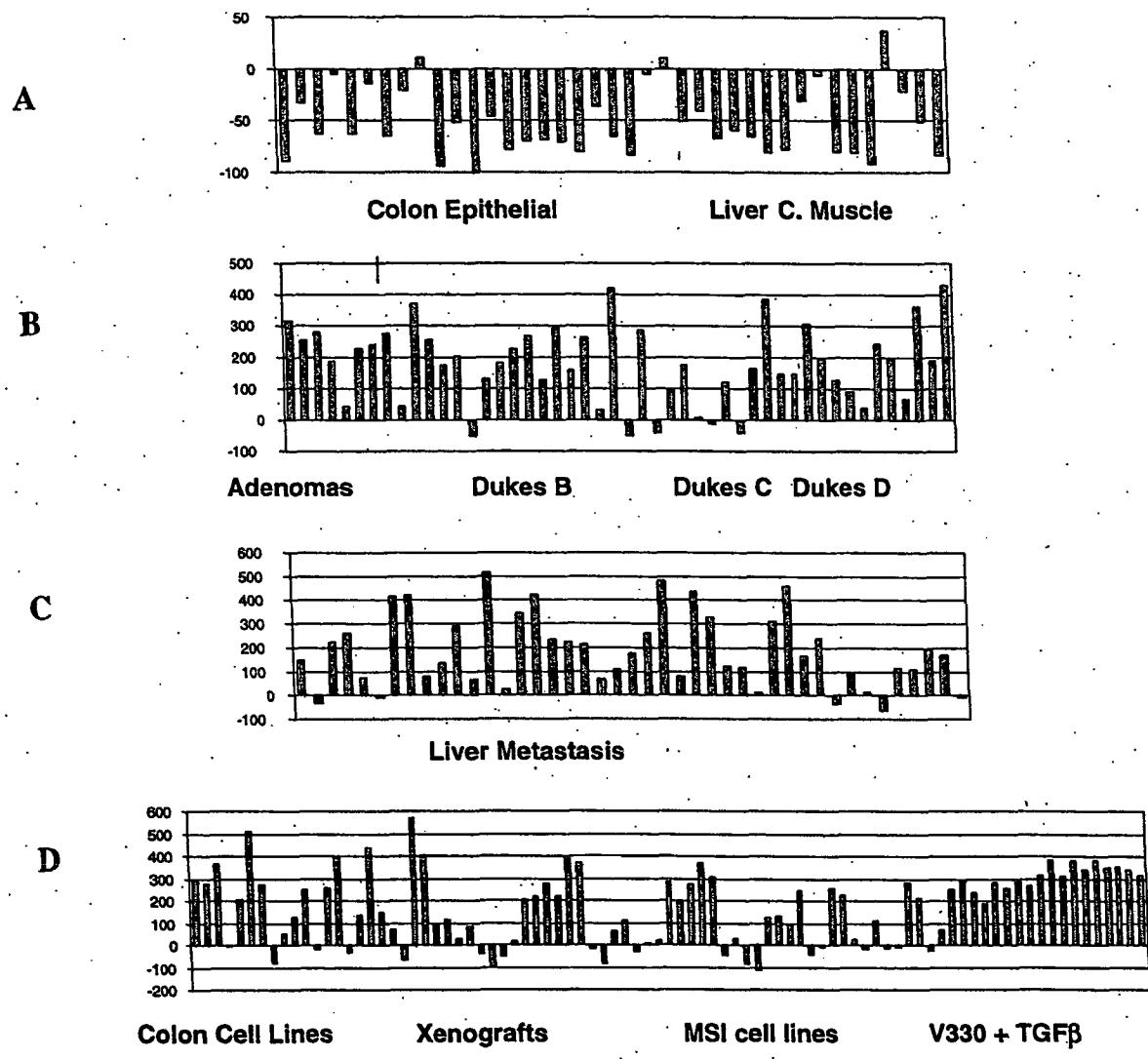


Figure 21

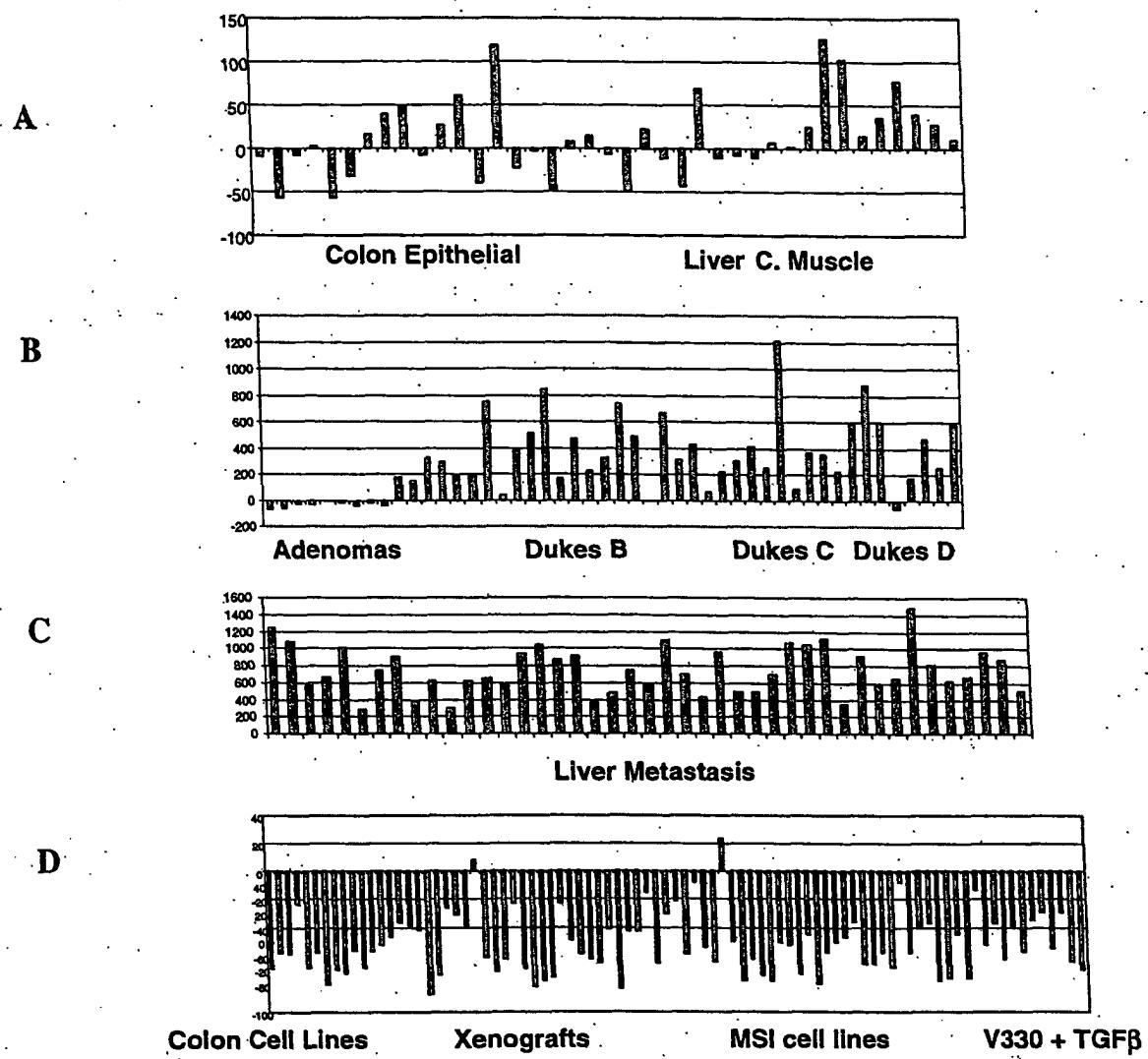


Figure 22

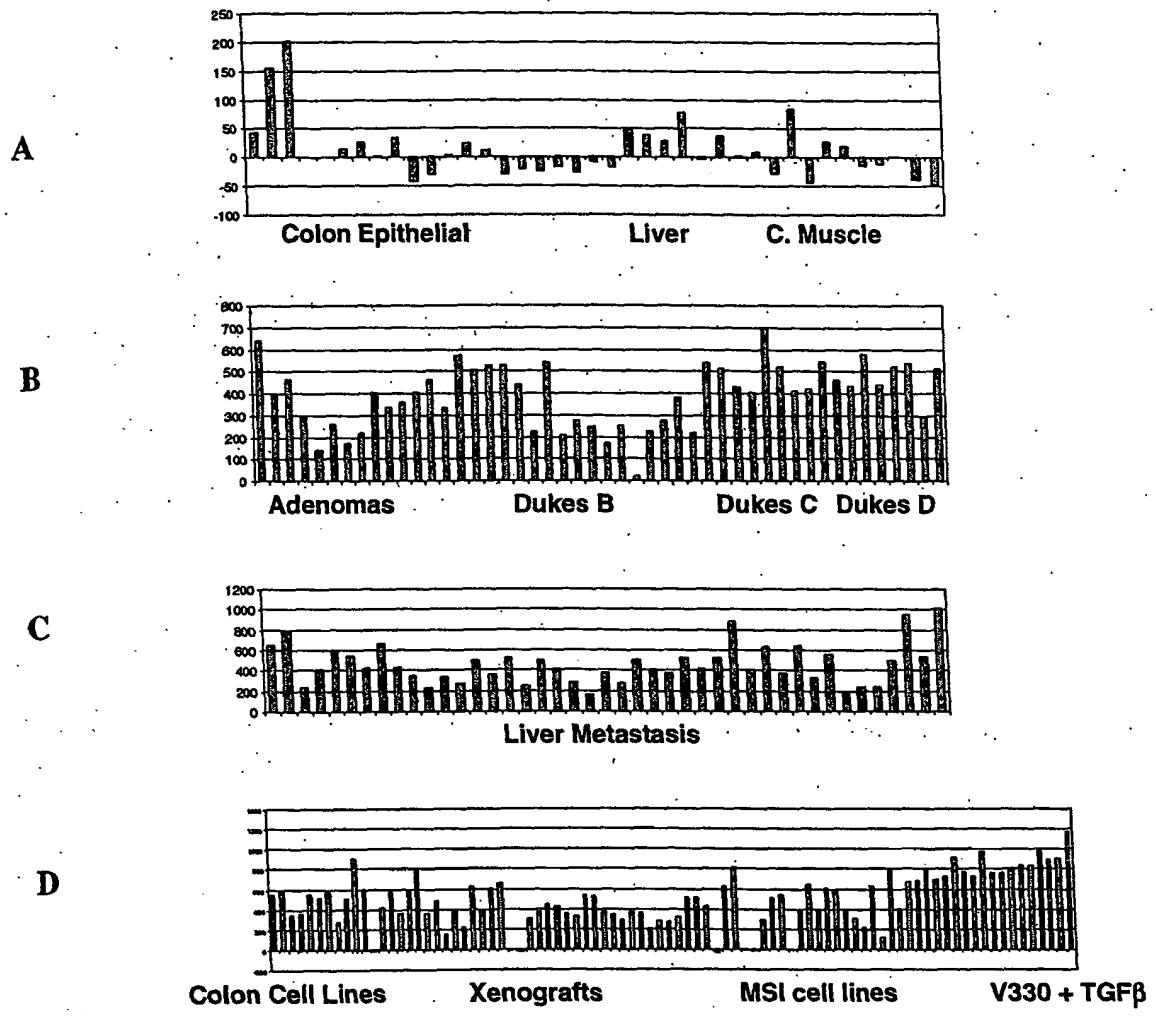
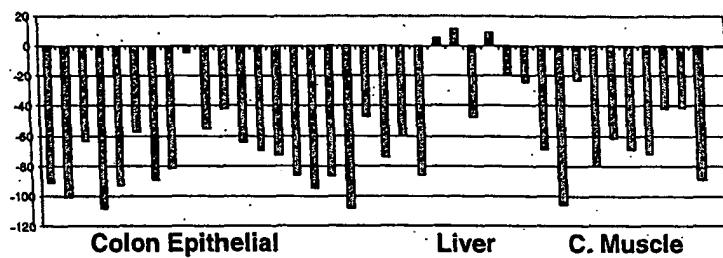
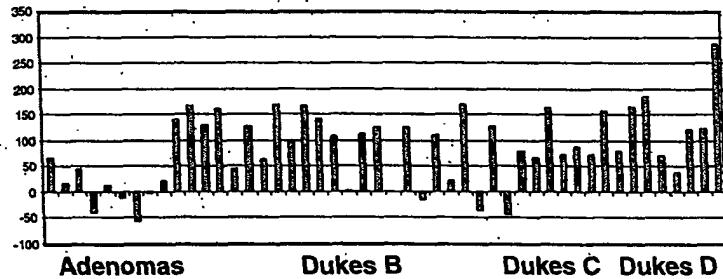


Figure 23

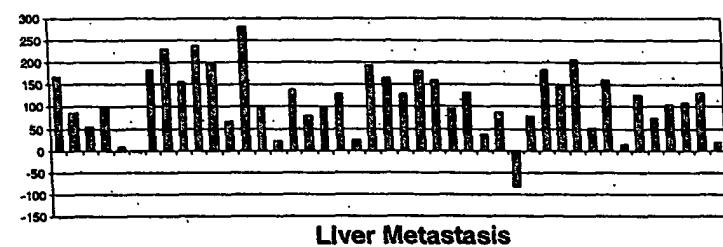
A



B



C



D

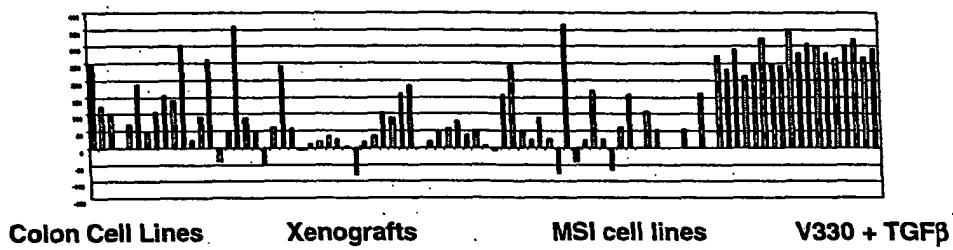


Figure 24

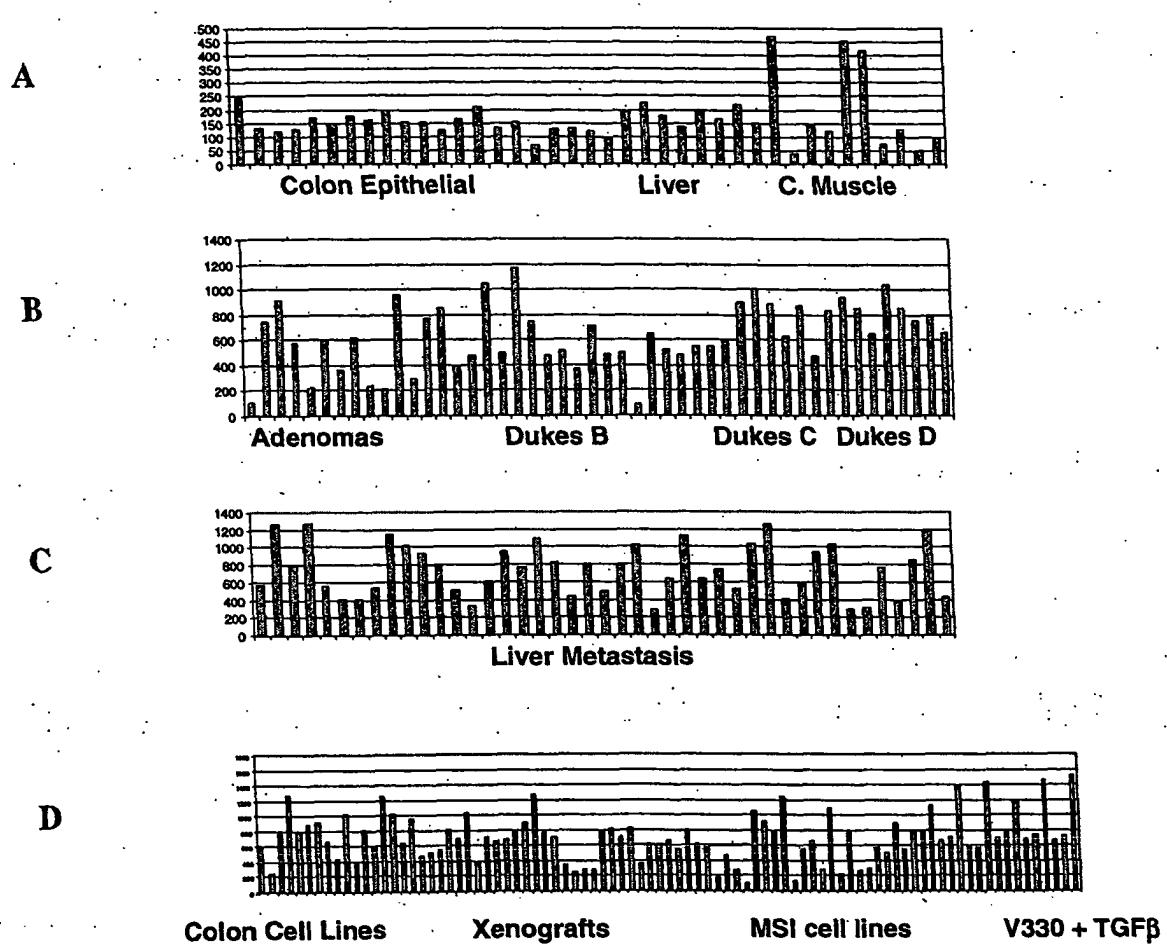


Figure 25

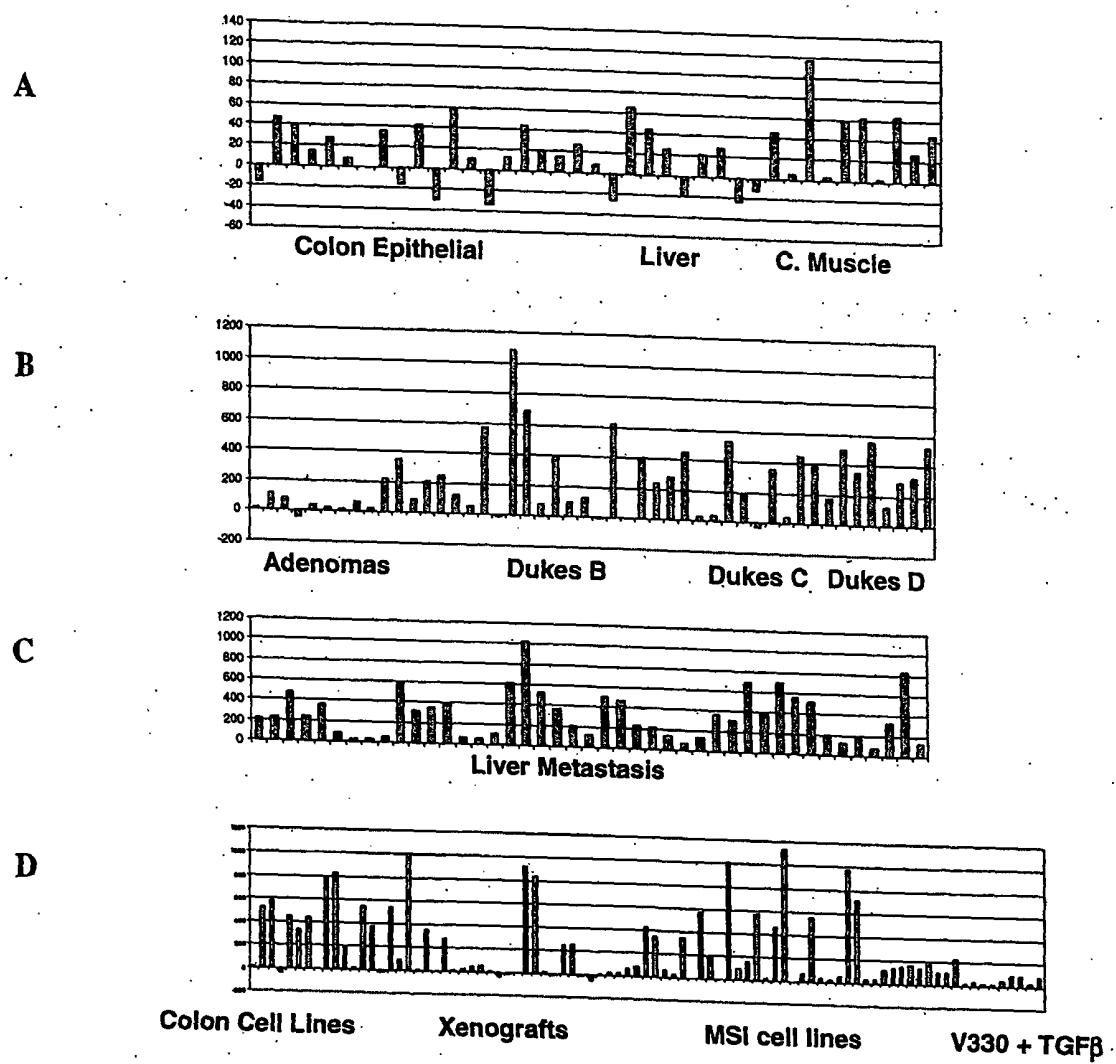


Figure 26

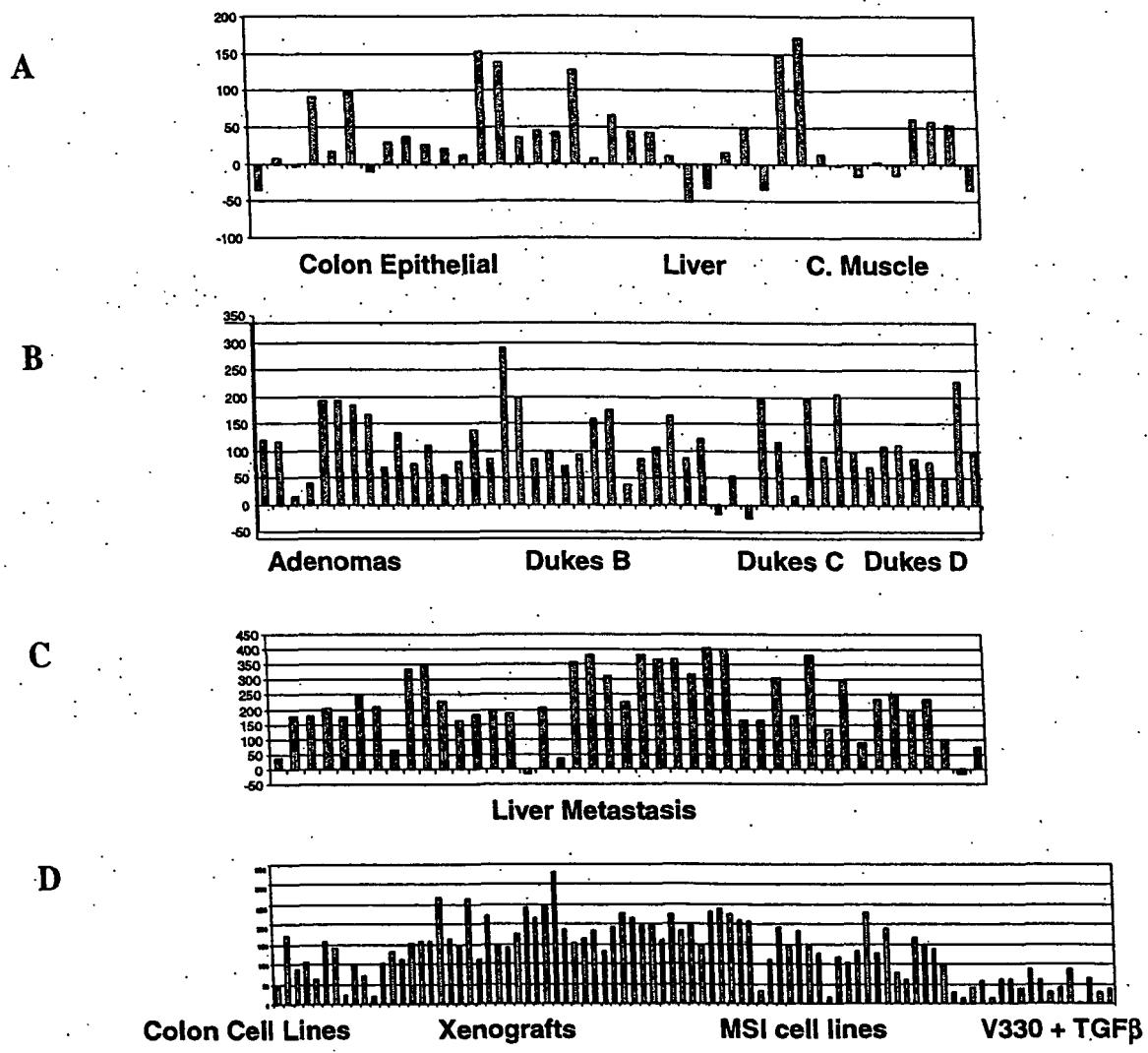


Figure 27

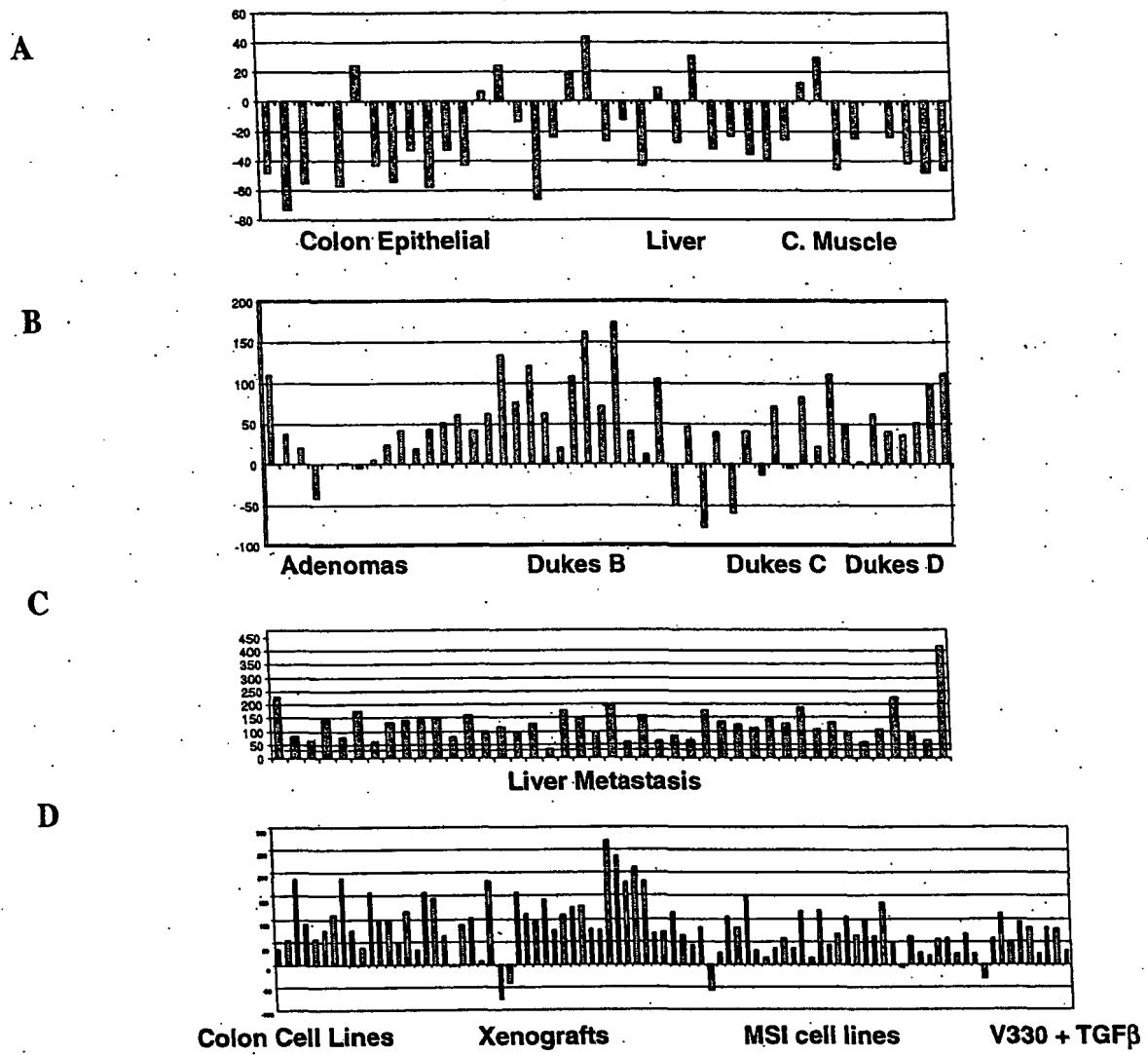


Figure 28

Normal Colon Cancer



Figure 29A

SAMPLE:

7774 7824 7583 8668 8677 8681 4253 4297

N T N T N T N T N T N T

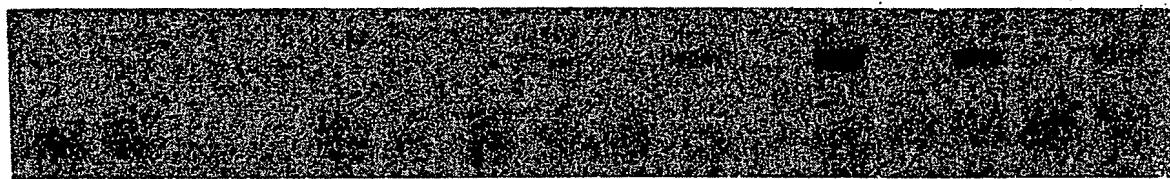


Figure 29B

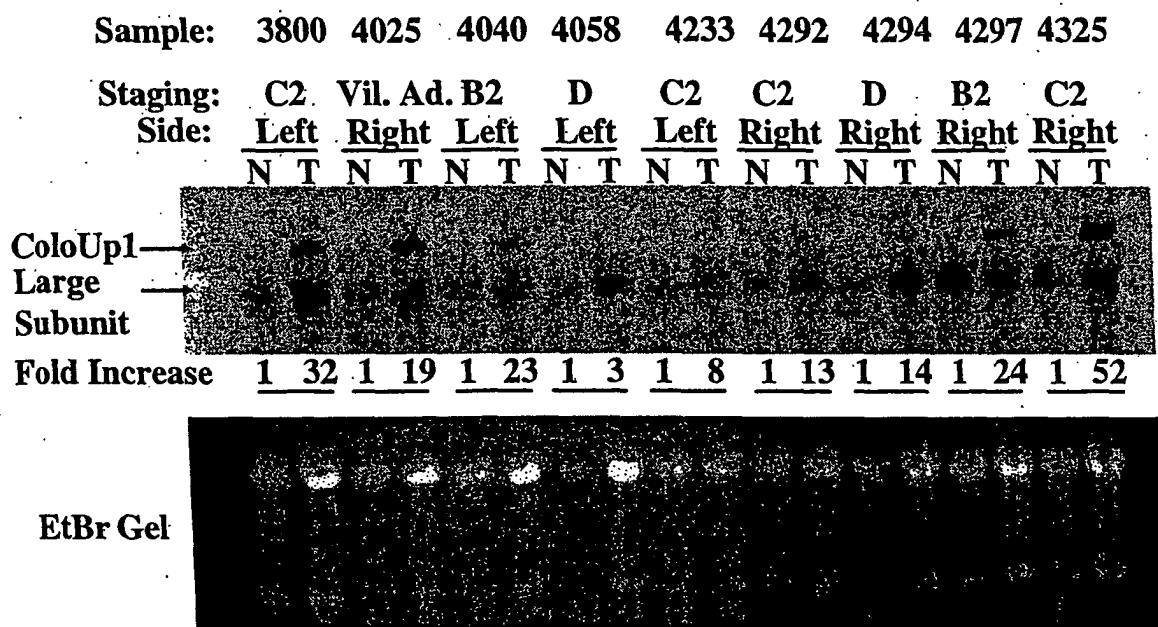


Figure 29C

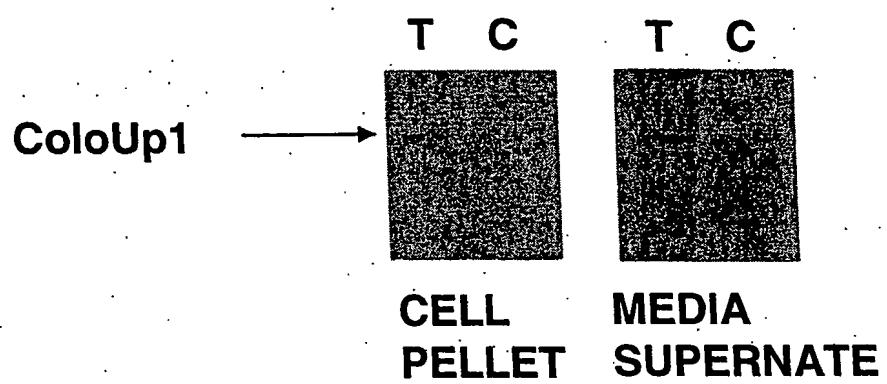


Figure 30A

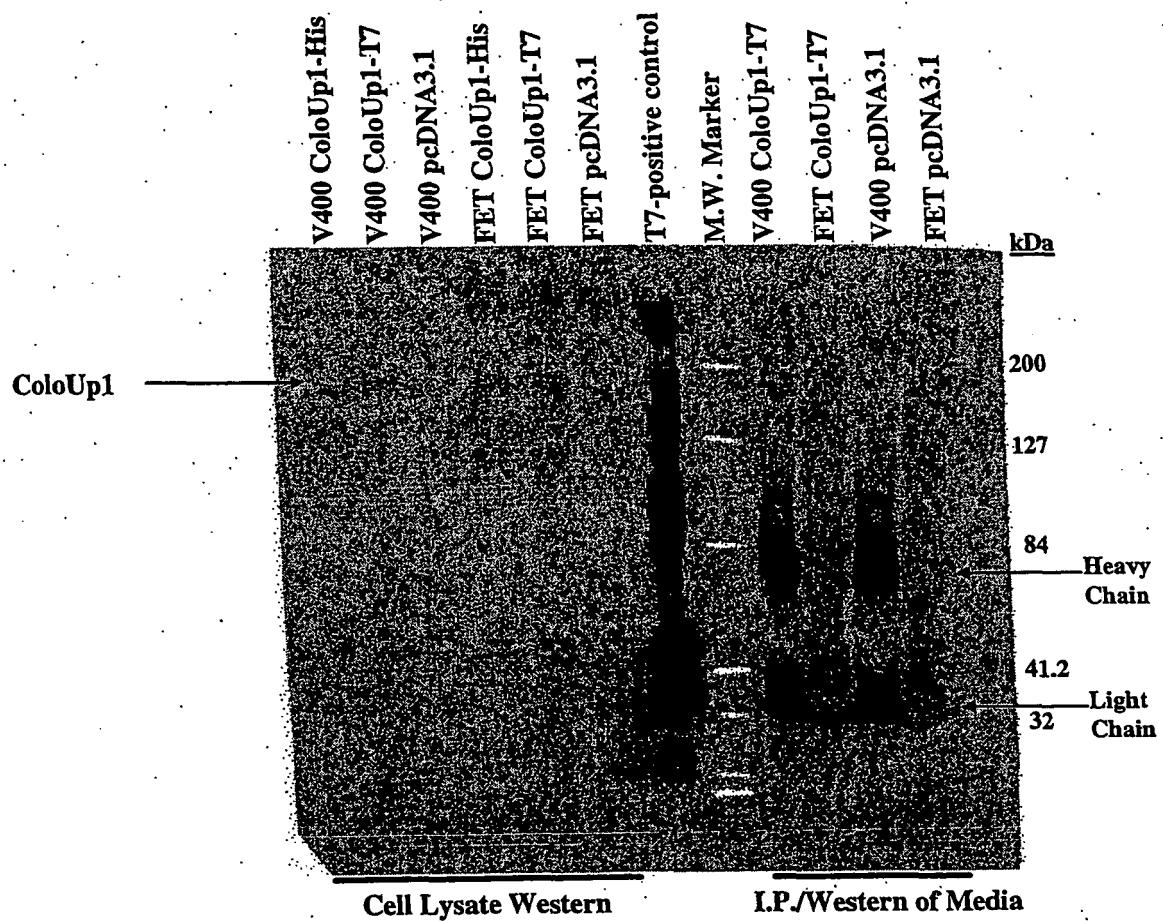


Figure 30B

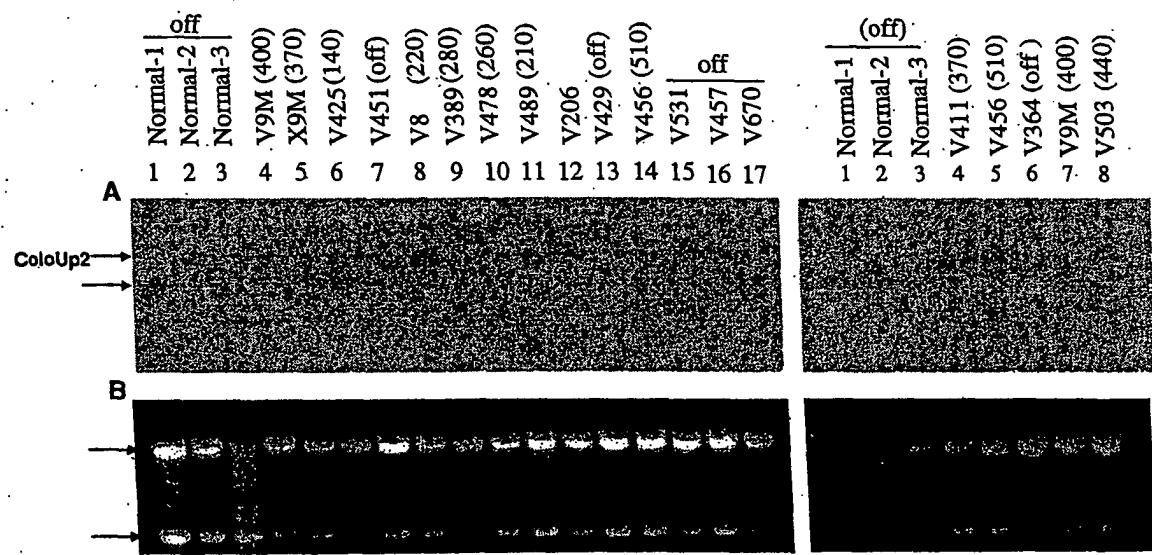


Figure 31

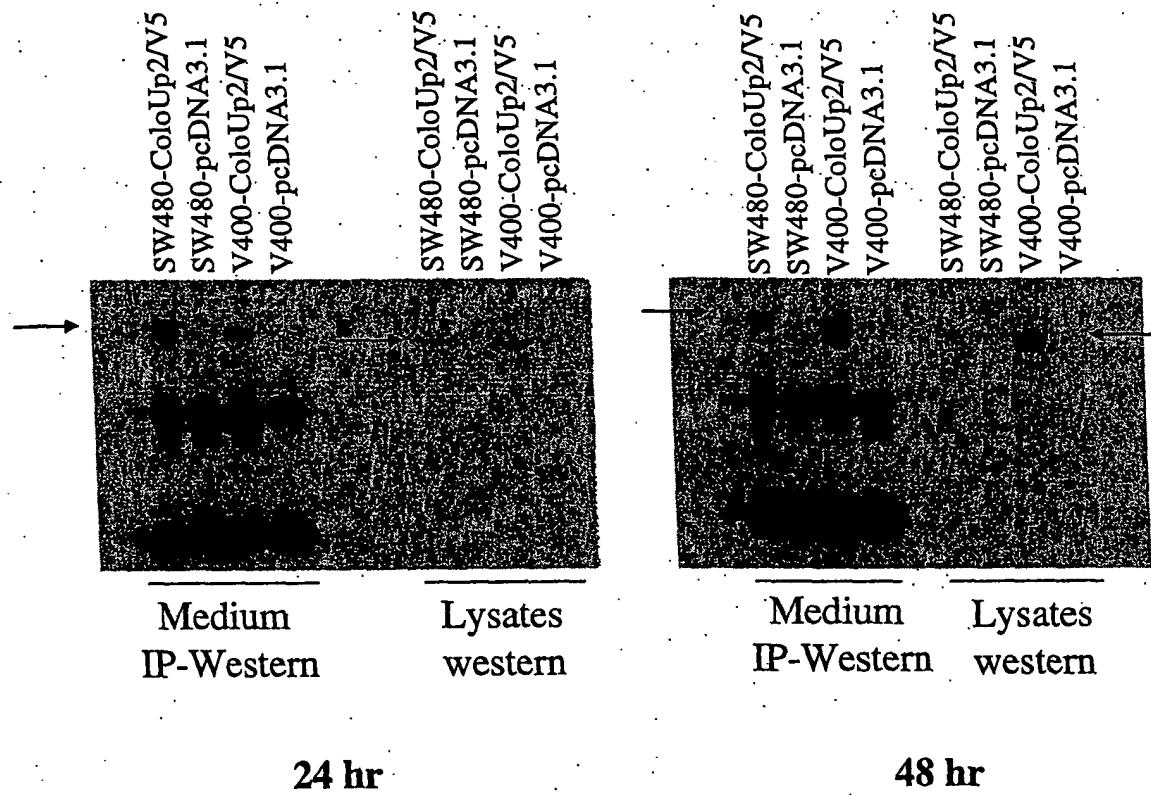


Figure 32

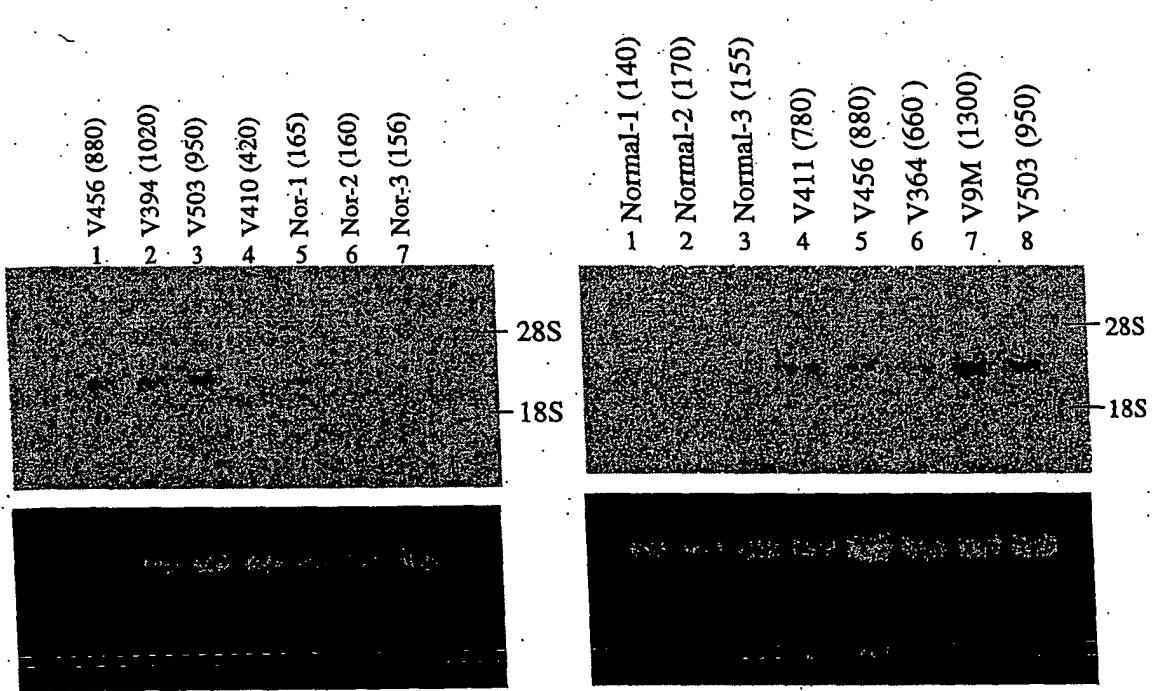


Figure 33

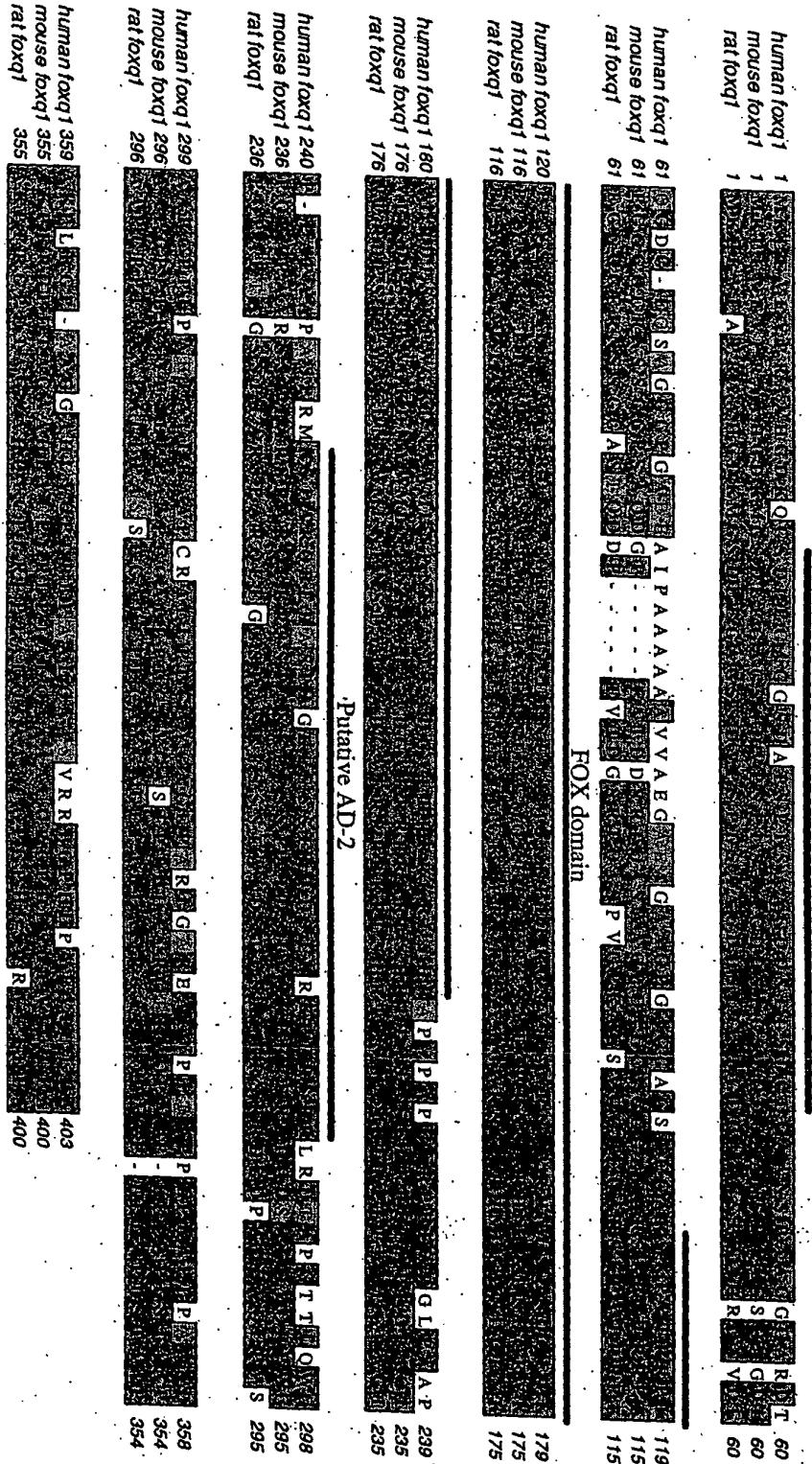


Figure 34

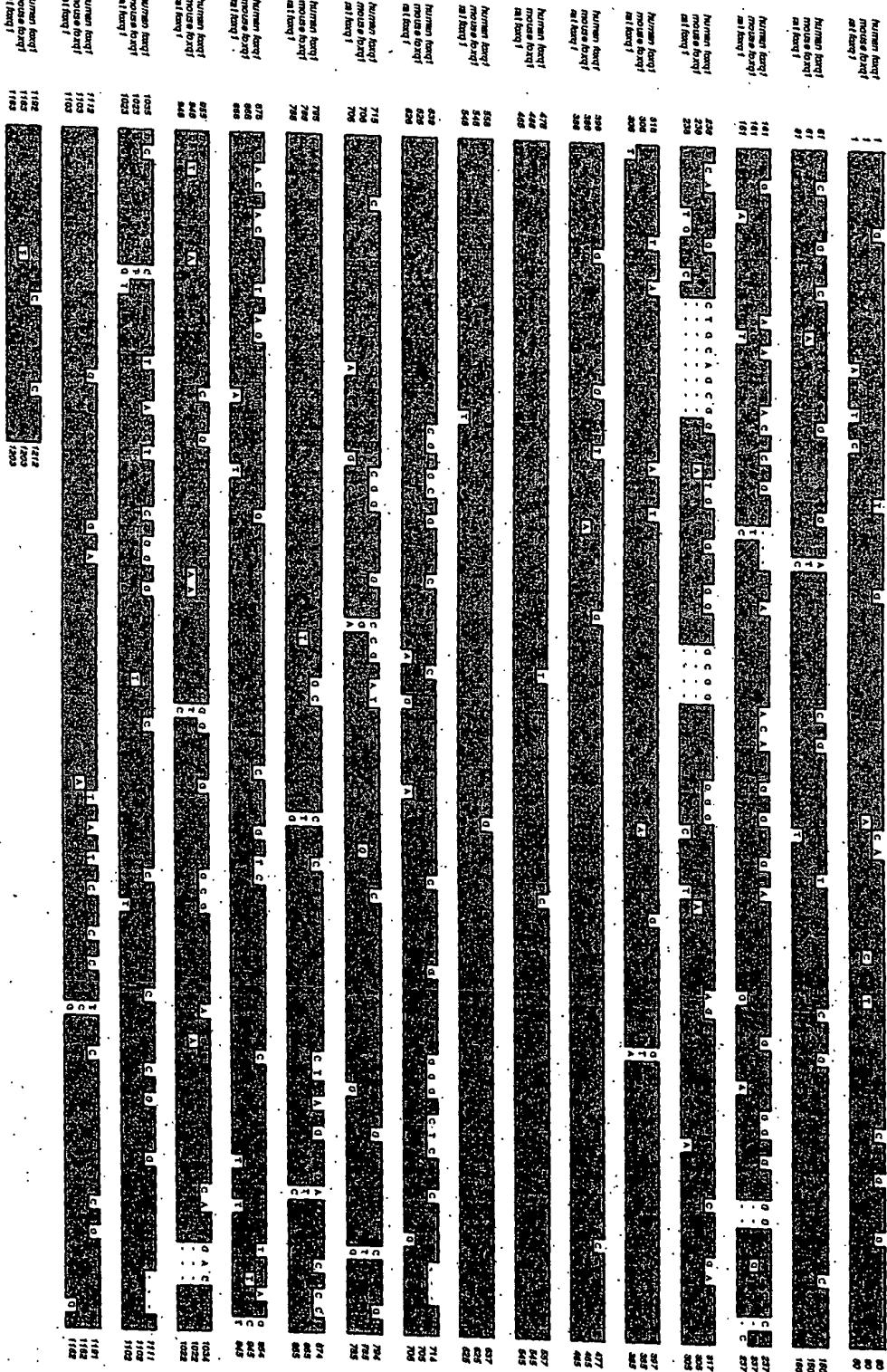


Figure 35

1 2 3 4 5 6

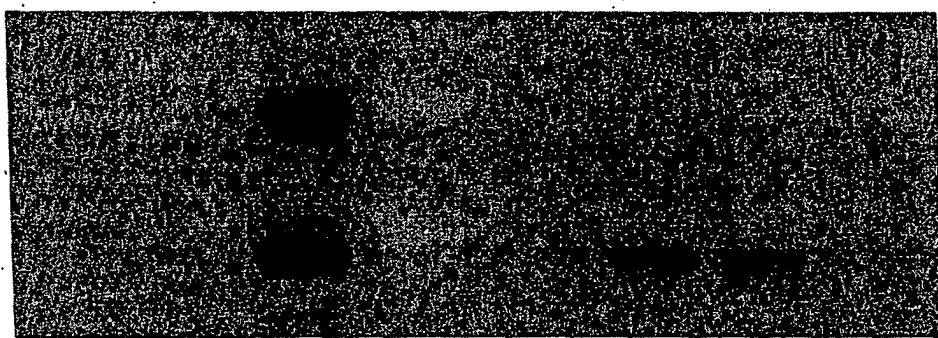


Figure 36

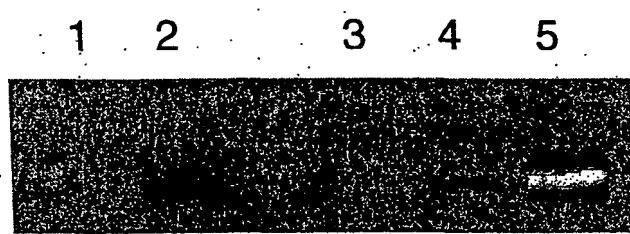


Figure 37

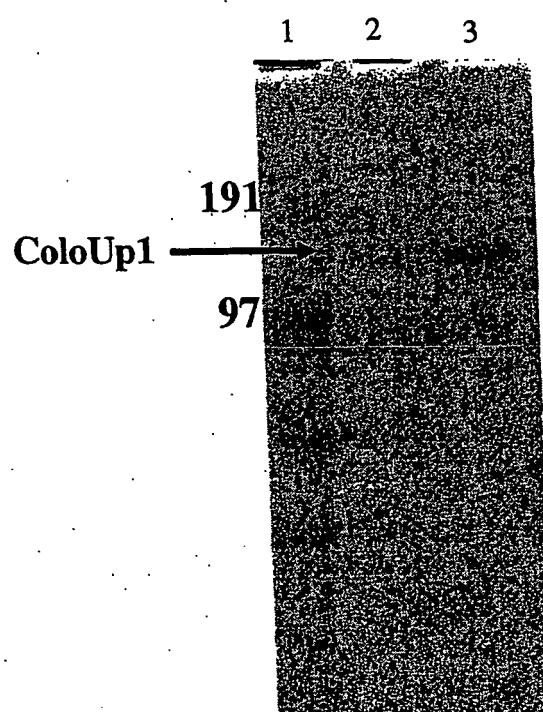
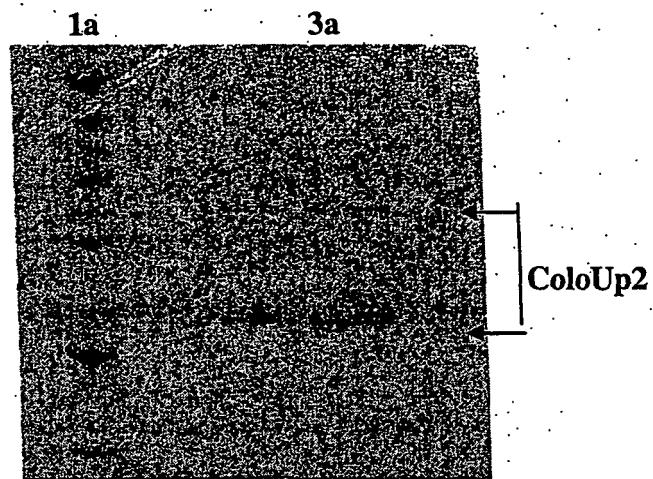
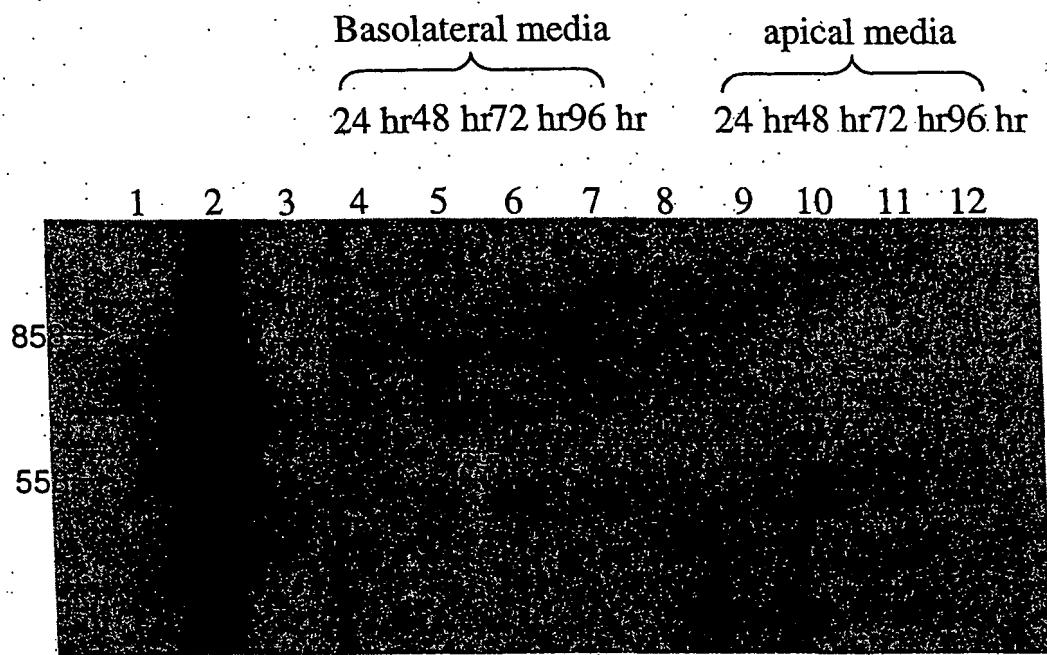
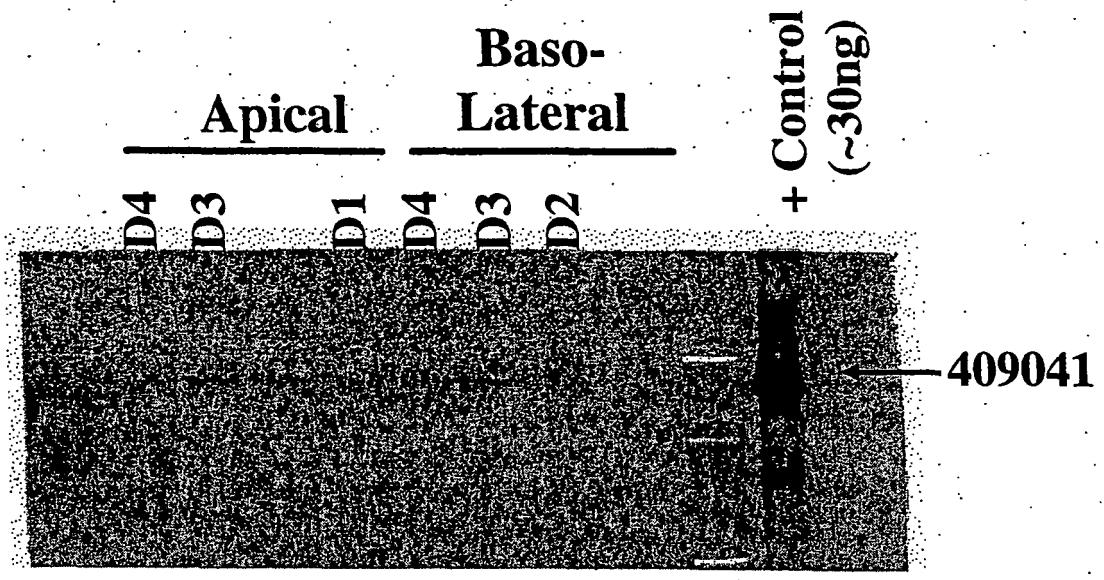


Figure 38



time points(hr)	resistance	transfection efficiency
0	220	N/A
24	199	15%
48	184	25%
72	220	30%
96	214	30%

Figure 39



Day	Resistance	% GFP Exp.
0	300	0
1	415	10
2	260	20
3	206	25
4	218	25

Figure 40

Amino Acid Sequence of a Secreted C-terminal Portion of ColoUp2

AVLAAHCPFYSWKRVFLTHPATCYRTTCPGPCDSQPCQNGGTCVPEGLDGYQCL
CPLAFGGEANCALKSLECRVDLLFLLDSSAGTLDGFLRAKVFVKRFVRAVLSE
DSRARVGATYSRELLVAVPGHEYQDVPLVWSLDGIPFRGGPTLTGSALRQAA
ERGFGSATRTGQDRPRRVVLLTESHSEDEVAGPARHARARELLLLGVGSEAVR
AELEEITGSPKHMVYSDPQDLFNQIPELQGKLCSRQPGCRTQALDLVFMLDTS
ASVGPNFAQMGSFVRSCALQFEVNPDVTQVGLVYGSQVQTAFGLDTKPTR
AMLRAISQAPYLGGVGSAGTALLHIYDKVMTVQRGARPGVPKAVVVLTGGRGA
EDAAVPAQKLRNNNGISVLVVGVPVLSEGLRLAGPRDSLHVAAYADLRYHQD
VLIEWLCGEAKQPVNLCKPSPCMNEGSCVLQNGSYRCKCRDGWEGPHCENRFL
RRP (SEQ ID NO:21)

Figure 41